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COMPUTERWORLD

Is the method consistent?

User pricing ties HP in knots

By Mark Halper
PALO ALTO, CALIF

Following its recent decision to shift to a user-based software pricing formula, Hewlett-Packard Co. now faces a Gordian knot of issues that will probably prevent it from fully implementing the new scheme before summer, at the earliest.

User-based pricing is potentially less costly for information systems shops. It eliminates the double jeopardy represented by processor-based pricing, in which a shop pays twice for upgrading its CPUs: once for hardware and a second time for software. It is well-suited for operations that need powerful CPUs tied to few user seats.

But before HP begins full implementation — which will differ across HP 3000 and 9000 lines (see story page 16) — it must work hand in glove with a legion of software partners such as Oracle Corp., Sybase, Inc., Computer Sciences Corp. and The ASK Group, Inc., among others, to establish uniformity in the way they set price categories. If HP fails, it risks causing payment headaches for users befuddled by countless price and licensing mechanisms.

Users and developers applauded HP's leadership among computer vendors in embarking on its pricing shift [CW, Dec. 7] and expressed hope that the company's preeminence in the open systems world will pressure other vendors to make similar moves.

While many software companies have already begun such a shift, leading hardware vendors that promulgate open and proprietary operating system software have not.

> "It's a complex dance in that there are many steps."
>
> *Wayne Holt, Software Research Northwest*

But no one — HP included — expects changes overnight.

Like a government trying to meet the demands of an eclectic constituency, HP is trying to balance the needs of customers with the needs of third-party software developers. HP must also account for the vicissitudes of market dynamics across its varied minicomputer and workstation lines and across different classes of software.

"It's a complex dance in that there are many steps," said Wayne

HP, *page 16*

IBM struggles on

Revamp has helped, but strategy questions still abound

By Johanna Ambrosio

■ A year after launching a massive restructuring effort designed to break its business into smaller, more discrete pieces, IBM is receiving kudos from large customers who are impressed with a nimbler, more price-competitive Big Blue.

Even so, the struggling behemoth has a long way to go in what is deemed a critical year. And last week's disclosure of personnel and manufacturing cuts are seen as salve on the wound.

For example, some small to medium-size firms said they have noticed few positive differences in their dealings with the new IBM.

Some have even complained about IBM's much-vaunted service and support, citing a constantly changing cast of sales representatives (see story page 12). Customers of all sizes pointed out that IBM still has to cut prices even more to get on par with other suppliers.

Making a move

The big question, according to observers, is whether IBM can move ahead quickly enough to take advantage of key growth areas, such as software and services, and refocus its energies away from the mainframe market while retaining an overall cohesiveness among the company's many units. Or a case of

Struggling, *page 12*

Buckling down

Analysts expect IBM to do the following:

- Continue to build and market its consulting businesses.
- Turn up the pressure on customers to convert to the newest releases of software.
- Jettison unprofitable product lines.
- Reorganize businesses that have been untouched, especially Programming Systems.
- Move up the introduction of its "open mainframe" from 1995 to 1994.

By Kim S. Nash
and Maryfran Johnson

■ As competition for the same set of commercial customers steadily mounts between IBM's money-making Application System/400 midrange family and the Unix-based RISC System/6000 line, technology advances are poised to reshape this pair of business units into even fiercer sibling rivals.

The Rochester, N.Y.-based AS/400 and Austin, Texas-based RS/6000 groups "are fighting with increased vigor," said Marc Schulman, president of Technology Strategies Group, Inc. in Stamford, Conn. "The intensity of competition between the two has increased since the decentralization of IBM."

Strategy, *page 13*

Service and support	C+
Sales staff and sales approach	C+
Research and development	B-
Product introductions	B+
Product delivery	C

Source: Computerworld Database Division

CW Chart: Stephanie Faucher

Hard times spur ingenuity

By Kim S. Nash

Desperate to save a buck after eight consecutive quarterly losses, Hartmarx Retail Group has turned to its information systems department for help.

The sale of one of the Norcross, Ga.-based clothier's divisions three months ago brought in more than a quick financial transfusion: The new owner of the unit is also paying Hartmarx to do its data processing. Retailing Hartmarx's IS expertise will bring in an estimated $1.6 million to $1.8 million per year, according to Lonnie Johnson, vice president of IS.

Doing more with less

In greener years, Hartmarx probably would not have stumbled on this money-maker of an idea. But Chapter 11 bankruptcy protection — or the prospect of filing for it — can lead IS groups to find innovative approaches to cut computing costs and reshape the IS function.

"The common way to deal with financial distress is layoffs or budget freezing," said Dennis Bowman, a management consultant at McKinsey & Co.'s Stamford, Conn., office. "But the better way to manage is to improve IS efficiency."

Troubled companies interviewed by *Computerworld* cited several tactics, including the following:

- Renegotiating cheaper or more flexible software and hardware contracts with vendors.
- Temporary outsourcing.
- Weeding out unnecessary equipment from data centers.
- Laying off employees from the bottom up.

Empowering IS during this period can be so beneficial that some analysts insisted that Chapter 11 is precisely the wrong time to make cuts in this area. Finely honed technol-

Hard times, *page 14*

Red ink spreads

As of 1992's third quarter, corporate bankruptcies had climbed 14% over last year, with nearly half of those business failures hitting the retail and service sectors.

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MAJOR RESTRUCTURINGS

Large customers see a nimbler, more price-competitive IBM since its restructuring into separate lines of business a year ago. But the financially beleaguered company still has work to do: It must cut costs and prices even further, recapture lost market share and refocus the company away from the slow-growth mainframe business. *Page 1*

IBM's AS/400 and RS/6000 units are beginning to fight for the same customers as the RS/6000 catches up with commercial customer demands and the AS/400 adopts more 'RISC-like' features. *Page 1*

Industry watchers worry about weaknesses in two key IBM subsidiaries — Integrated Systems Solutions Corp. and the IBM PC Co. — while users offer advice to IBM Chairman John Akers. *Pages 12, 13*

DEC seeks to target broader markets with new organization and more focused product offerings. *Page 8*

DOWNSIZING AND LAYOFFS

The state of Maryland consolidates data centers for a $5 million savings the first year and projected savings of $29 million during the next five years. *Page 8*

The EPA outsources the pain of major IS cuts to its new contractor, Martin Marietta. *Page 6*

American Airlines' cost-cutting grazes the Sabre Computer Services division, which loses 89 IS workers. *Page 2*

DISASTER RELIEF

Learn a few IS cost-saving tricks from the experts — companies in or near the Chapter 11 firing line. *Page 1*

Television networks shipped everything from portable satellites to solar showers in order to broadcast reports on Operation Restore Hope from Somalia. *Page 15*

Several Wall Street area businesses were forced to transfer staff and computer operations from flooded offices to backup emergency sites following the brutal northeaster that pounded the financial district last week. *Page 20*

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a In Viewpoint this week: Is client/server the computing savior of the '90s? Or is it just hot air? Columnist John Gantz shares his ideas. Page 25

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AMR cuts costs, jobs

Sabre Computer Services division loses 2% of work force

By Neil Margolis
DALLAS

A corporatewide cost-cutting mandate on parent AMR Corp.'s part last week cost American Airlines' Sabre Computer Services division 89 jobs, roughly 2% of its work force.

So far, three other AMR information systems divisions — Sabre Travel Information Network, American Airlines Decision Technologies and AMR Information Services, Inc. (AMRIS) — remain unscathed by the trickle-down effect of the approximately 576-person work force cut announced earlier this month.

The three units are likely to remain in the safety zone, said AMR spokeswoman Teresa Hanson, because they are clear profit-makers for the beleaguered airline company.

Sabre Computer Services — which is "the computer services and development group for the entire airline" — is more vulnerable to swings in the fortunes of the overall airline industry than are AMR's other IS-related operations, Hanson explained. Ironically, that is because it moved early and effectively to tightly align its initiatives with the goals of the various business units it serves, some of which are now being scaled down.

Such an alignment is currently being urged by industry observers as a key hallmark of the IS organization that will survive, much less thrive, in the next several years. Integrating IS into business unit customers, however, means that the fortunes of individual IS professionals are tied to those of the customer units.

"No specific IS projects" have been tabled, Hanson said of the Sabre cuts, which encompass 17 layoffs and 72 voluntary severances.

Hanson denied that the Sabre cuts contradicted earlier reports that the AMR ax would likely bypass IS. "Yes, we were saying that the bulk of IS would be safe," she said, "and that is true today. Three IS organizations are untouched."

Rob Decker, an analyst at Duff & Phelps, Inc., was similarly sanguine. "American has always been considered a leader in IS, and that hasn't changed," he said. "But the benefits conferred by the systems are dwarfed by the pressures and problems of the airline industry right now."

The work-force cuts currently augur no changes in the management structure of the computer services division, according to Hanson.

Meanwhile AMRIS, its employee roll intact, is battling to hold on to one of its outsourcing clients.

Carrollton, Texas-based Compass Computer Services, formed by former Confirm partners Hilton Hotels Corp. and Budget Rent-A-Car Corp. to operate those firms' shared NORTH reservation system and Hilton's EAST property management system, inked a "global systems support services" contract with AMRIS in late 1988.

Recently, however, Compass put the contract out to bid.

"AMRIS is still a viable contender," said AMR spokeswoman Karen Wacaser last week.

AMR Corp.

Senior vice president, IS technology: Max D. Hopper

U.S. IS budget: $1.1 billion

Approximate number of IS staff members: before cut — 6,096; after cut — 6,007

Processor value: $79 million

Number of PCs and terminals: 117,889

Late Breaking News

EDS to ink pact with Bethlehem Steel

Electronic Data Systems Corp. this week is expected to sign a 10-year, $500 million outsourcing agreement with Bethlehem Steel Corp., sources close to the Dallas information services company said late last week.

The $4.3 billion firm, which is smarting from heavy losses, is like the rest of the steel industry struggling to cut costs to remain competitive with foreign producers. The company spent $82.6 million on information systems this year and employs 469 people in its IS department, according to data collected by *Computerworld*.

"Aha! So they won!" said J. P. Richard, an outsourcing analyst at Vienna, Va.-based market research group Input. Industry insiders, he noted, have been eagerly awaiting the outcome of what was seen to be a heated contention between EDS and outsourcing archrival Integrated Systems Solutions Corp. for the lucrative Bethlehem Steel deal, "one of the biggest outsourcing deals to be signed by anyone in quite some time."

It is also believed to be the first of what is expected to be a number of deals signed in the steel industry in the coming months, he added.

The fact that two major vendors so vigorously duked it out over the troubled manufacturing company, said Richard, "can only be good for the user. Whichever firm finally won that deal had to put together a heck of an offer to beat the other's bid. EDS is very strong in the manufacturing area. They're probably better positioned to handle this contract than anyone in the [outsourcing] business," Richard said.

The deal could extend beyond Bethlehem's $5.4 million IBM complex and might involve an upfront payment to the struggling steel maker, one Wall Street source said, citing the magnitude of the contract.

EDS declined comment and Bethlehem Steel was unavailable at press time.

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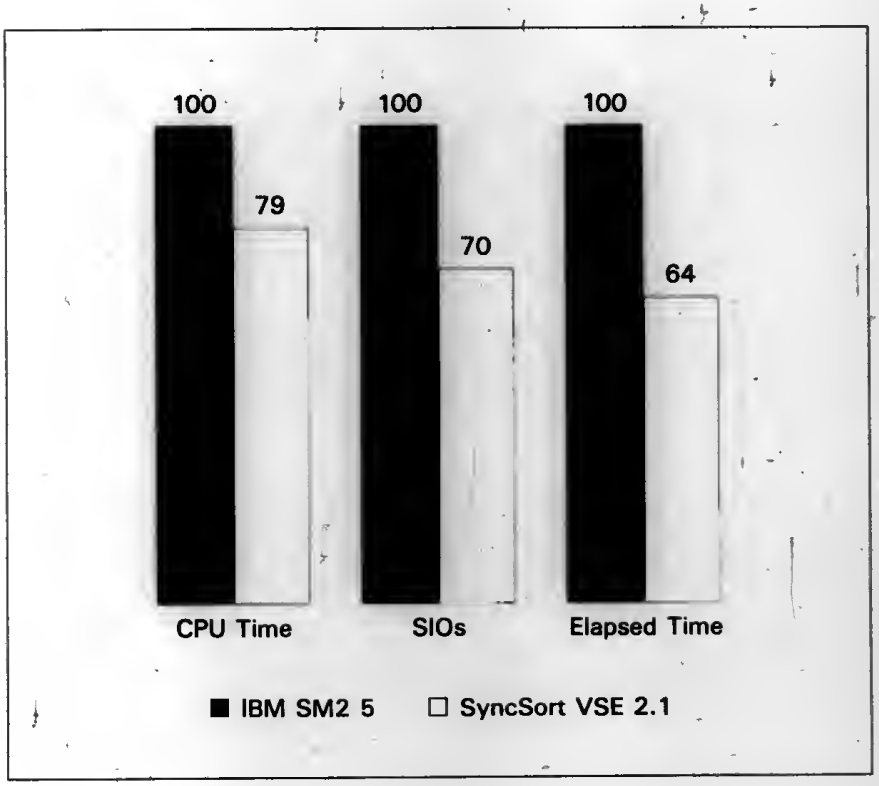

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Oracle 7 slow out of the gate

But users are patient, preferring to wait for unhurried, bug-free version

By Jean S. Bozman
SEBWHOBCITY, CALIF

■ Oracle Corp. missed a commitment to ship its overdue Oracle 7 database in volume this fall, managing to deliver production copies to only about 20 selected customer sites as of today.

As thousands of Oracle user sites await shipment, the company now says they can expect volume deliveries of Unix and Digital Equipment Corp. VAX/VMS versions by February.

Meanwhile, early reports from the sites just beginning to use Oracle 7 indicate that some are not using many of the software's new distributed database features for client/server computing. Instead, they are using the release as a performance upgrade from the 4-year-old Oracle Version 6.0.

These sites have so far noted few bugs, but most said they are stress-testing their new software for a few weeks before putting it into production. Many of the same sites have been participating in Oracle's Alliance beta-test program, which began in August 1991.

When Oracle 7 was announced in June 1992, shipments were promised for October. Oracle shipped the VAX/VMS version to a few customers on Oct. 31 and last week claimed it would deliver Unix versions to select sites with Hewlett-Packard Co., IBM, Sun Microsystems, Inc., Pyramid Technology Corp. and Sequent Computer Systems, Inc. machines by Dec. 21.

"It's a type of controlled release, I guess you could say," said Tim Negris, senior director for server product marketing. "We're offering production support for Oracle 7 applications to customers who sign up for that service. We'll work with any customer who requests it."

Waiting game

"We've watched the semantics flip back and forth for months now," said Terence Quinn, an analyst at Kidder, Peabody & Co. in New York. "It's much later than the users expected, but the sales force has been saying that the production version wouldn't be available until early 1993."

Tardy production deliveries are not a major problem, according to analysts. "Users would rather see them ship it three or four months late and bug-free than trying to push it out the door in the fall time frame they promised," said John Morrell, a Unix analyst at International Data Corp. in Framingham, Mass.

But some early Oracle 7 customers pressed Oracle for production-level software, supported by Oracle's customer hot line, partly because of their own contractual commitments to end users. "The people who have [production Oracle 7] are asking to get it early," said Jim Bosco, project manager at ITT Hartford Life Cos.'$1 billion Employee Benefits Division in Hartford, Conn.

"We went into production this week," said Dennis Erskine, president of Intelligent Networks, Inc., a Chantilly, Va., Oracle value-added reseller that is shipping a 400-node distributed database network based on Oracle 7 and DEC VAXs to a large customer next month.

Intelligent Networks, which will build and operate the distributed database network for People Karch International, a Chantilly, Va., fitness chain and day-care center operator, said it is still stress-testing many of Oracle 7's key features, such as two-phase commit for real-time updates, snapshots, referential integrity and the SQLNet 2.0 communications package.

Some early sites said they viewed Oracle 7 as an upgrade and did not try to exercise all of its new features. J. J. Kenny Co., a New York firm that rates municipal bonds and provides information services to brokers, is in the midst of a downsizing move from an IBM 3090 Model 150E mainframe. It plans to have 1,200 users for its 20G-byte Oracle 7 database by the end of 1993.

"We have gotten clearance from Oracle for production support for an early release, 7.0.11," said Ira Kirschner, director of technical services at J. J. Kenny. "By the end of this week, we expect to have upgraded our whole [computer] environment to 7.0.11."

Oracular view

In early December, some users found minor bugs in Oracle 7.0.10, which were fixed in 7.0.11, the release now approved for production at some sites.

The reported bugs, which occurred during the loading of database tables, did not cause a system crash, but Oracle recommended waiting for 7.0.11.

The general availability production release of Oracle 7 in early 1993 will be called 7.0.12, an Oracle spokeswoman said.

Vendors talk AppleTalk interoperability issues

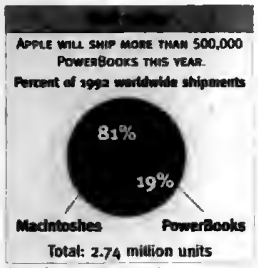
By Joanie M. Wexler

Evidence that the Macintosh has become a serious member of corporate internetworks surfaced last week with the birth of an AppleTalk user/vendor interoperability forum.

Blessed by Macintosh-maker Apple Computer, Inc., several key communications vendors, including router bigwigs Cisco Systems, Inc., Wellfleet Communications, Inc. and 3Com Corp., said they have united to standardize cross-equipment AppleTalk internetworking schemes and make the protocol more efficient across wide-area links.

Users running large AppleTalk internetworks applauded the arrival of the AppleTalk Networking Forum (ANF), which also includes Apple, Novell, Inc. and others. They cited the following problems with blending AppleTalk networks into their backbones, which the ANF will address:

- The "chatty" nature of the AppleTalk protocol, which decreases bandwidth efficiency on relatively slow wide-area links and hampers the scalability of growing Apple networks.
- Inconsistent vendor implementation of "zone filters," which are known to hide network services from unauthorized users.
- The lack of close integration between Transmission Control Protocol/Internet Protocol (TCP/IP), a widely used backbone protocol, and the Macintosh.



Source: Computer Intelligence/Infocorp

- The absence of a network numbering design to allow AppleTalk networks in different companies — once meant to be isolated from each other and thus incorporating duplicate numbering schemes — to communicate.

IP encapsulation

For example, Brian Donovan, network manager at Hambrecht & Quist, Inc. in San Francisco, said he plans to participate in the ANF to promote the encapsulation of AppleTalk in IP packets. He runs several hundred AppleTalk nodes coast to coast.

"Having one protocol to concern myself with in the backbone makes the network easier to control and manage," said Donovan, who explained that AppleTalk has been the firm's only protocol outside its Ethernet backbone for four years.

Donovan said he would like to see the forum's work go beyond encapsulation to render "TCP/IP native to the Mac. I'd like to eliminate AppleTalk directly and just run TCP/IP over everything," he said.

A network specialist at a large transportation company who is very familiar with the ANF's plans explained that the majority of the work will address limitations with AppleTalk's proprietary Router Table Management Protocol (RTMP), which is entrenched in AppleTalk code and contributes to the protocol's overhead.

RTMP, unlike "open" protocols such as Open Shortest Path First, "broadcasts table updates every 10 seconds whether you need it or not. So you can appreciate what happens to network performance over a relatively low-speed [wide-area] connection," he said.

The user, who asked not to be identified, runs a global, 1,500-Macintosh AppleTalk network.

He said a new Macintosh routing protocol from the ANF "will belch out router table updates only if there is a change."

Wireless links bow for Macs, PowerBooks

By Joanie M. Wexler
OVERLAND PARK, KAN.

Digital Ocean, Inc. said last week that in March, it will ship the first wireless local-area network connection for Apple Computer, Inc.'s portable PowerBooks and desktop Macintoshes. The move will allow roaming PowerBook users to access their LAN from anywhere in their office building.

Digital Ocean's radio-based Grouper product should also open the door for administrators of desktop Macintosh networks to the flexibility of wireless options that operators of PC-based LANs have had for the past two years.

Grouper appeals to users such as Alice Dixon, electronic publishing specialist at Western Auto Supply Co. in Kansas City, Mo. Dixon is a PowerBook user and supports 50 desktop Macintoshes.

Dixon is responsible for automating the company's advertising and marketing department. "I take my PowerBook with me everywhere and would like constant access to the network," she said.

On-the-fly LAN

Doug Bachtel, director of marketing at Digital Ocean, said he envisions users creating a portable network on the fly at meetings. For example, several marketing staff members could congregate in a conference room and cooperatively edit a press release. Or a financial staff member could fold up his PowerBook, walk it down the hall for a second opinion on a spreadsheet and make changes in real time, he said.

Grouper's pricing is slated to fall "under $500," with specifics to come, Bachtel said. Dixon said she would have a tough time justifying a cost "over $500, but at $99, no problem."

Grouper is both a transmitter and receiver, and it requires an separate antenna. However, Bachtel said that sometime in 1993, Digital Ocean intends to introduce a separate hub product that would allow Grouper to bridge to wired LANs and access the corporate internetwork.

TWO-PHASE COMMIT COMPARISON

SYBASE

50 LINES OF COMPLEX CODE

```
dbsqlexec ( dbproc_ server 2 );
/*
  two-phase()
  {

  /* open up two servers and a commit service */

    dbproc_server1 = dbopen(login, databasename1);
    dbproc_server2 = dbopen(login, databasename2);
    dbproc_commit = open_commit(login, NULL);

  /*
  ** prepare data for each command buffer and select a database to
  ** use, then start distributed transaction on commit service
  */
}
/*
my
DE
DE
co
{
    commid = start_xact(dbproc_commit, application, "my_xact", 2);

  /*
  ** build transaction name and begin transactions on different
  ** servers
  */

    build_xact_string("","" commid, xact_string);
    dbfcmd(dbproc_server1, "BEGIN TRANSACTION %s",
    xact_string);
    dbsqlexec(dbproc_server1);
    dbfcmd(dbproc_server2, "BEGIN TRANSACTION %s",
    xact_string);
    dbsqlexec(dbproc_server2);

  /* perform various updates and then.... */

  /* if there is a failure on one abort all of them */

    if (return_code == FAIL)
    {
      abort_xact(dbproc_commit, commid);
      dbcmd(dbproc_server1, "ROLLBACK TRANSACTION");
      return_code = dbsqlexec(dbproc_server1);
      dbcmd(dbproc_server2, "ROLLBACK TRANSACTION");
      return_code = dbsqlexec(dbproc_server2);
      if (return_code != FAIL)
      {
        remove_xact(dbproc_commit, commid, 1);
      }

    dbexit();
    exit(ERREXIT);
    }

  /* otherwise prepare to commit */
  dbcmd ( dbproc_server 1, "PREPARE TRANSACTION");
  dbsqlexec (dbproc_ server 1);
  dbcmd (dbproc_ server 1);
  dbcmd ( dbproc_server 2, "PREPARE TRANSACTION");
```

SYBASE code example from A Guide To SYBASE and SQL Server by D. McGoveran with C.J. Date.

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```
UPDATE SAVINGS
SET S_BALANCE = S_BALANCE - 250.00
WHERE S_DEPOSITOR = 'JONES';

UPDATE CHECKING
SET C_BALANCE = C_BALANCE + 250.00
WHERE C_DEPOSITOR = 'JONES';

COMMIT WORK
```

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News Shorts

Everex on the brink?

Everex Systems, Inc., the troubled Fremont, Calif., PC manufacturer, last week restated its expected loss for 1992 and drew closer to becoming the PC industry's first major casualty. While results remain unofficial, the company said it now expects to lose between $80 million and $100 million for fiscal 1992 on sales of $503 million, and it will post "a substantial loss" in the first quarter of fiscal 1993, ended Oct. 31. Everex said it expects its auditor to question the company's ability to survive when it releases its audit. In addition, Everex said Harold Clark, president, and David Zacarias, chief financial officer, have resigned.

AST unveils low-end notebooks

AST Research, Inc. rounded out its notebook product line with a new group of low-end notebooks. The Intel Corp. 80386SL-based PowerExec EL family starts at a suggested list price of $1,745. It is a stripped-down version of the PowerExec notebook family AST launched in late September. The new PowerExec ELs have many of the same features of the PowerExec but have only one Personal Computer Memory Card International Association slot instead of two and come standard with nickel cadmium batteries instead of nickel metal hydride batteries. The base model comes with 2M bytes of random-access memory and a 60M-byte hard drive.

Microsoft extends WOSA API

Microsoft Corp. has announced the latest in its series of Windows Open Services Architecture (WOSA) application programming interfaces (API). The Windows System Network Architecture API can be used by application developers to take advantage of Windows features while remaining compatible with other Systems Network Architecture APIs. Microsoft claimed the API will help developers write software that will better integrate Windows workstations with IBM mainframes and minicomputers.

Banyan, Novell cooperate on support

Banyan Systems, Inc. and **Novell, Inc.** have signed a joint support agreement under which Banyan will join Novell's Technical Support Alliance and Novell will join Banyan's Strategic Support Alliance. The agreement between the two companies, which compete fiercely in the local-area network operating system market, was sparked by Banyan's upcoming Enterprise Network Services for NetWare product, which will offer directory, management and security services on Novell NetWare LANs.

SHORT TAKES Global network services provider **BT** said it will slash the pricing of its domestic frame-relay services by nearly 50%, depending on configuration. . . . **Borland International, Inc.** announced last week that it had acquired dBase-compatible technology from **WordTech Systems, Inc.** WordTech's eight-person development team will join Borland's database group. . . . U.S. marshals in 10 locations in New Jersey and California seized more than $9 million in counterfeit MS-DOS software, reportedly the largest such seizure in history. . . . **Dell Computer Corp.** last week said it would start a Professional Services Capabilities unit to strengthen its ties to the system integrator and value-added reseller community. . . . **WordPerfect Corp., Delrina Corp.** and **WordStar, Inc.** have committed to message-enabling their applications, through support of **Microsoft**'s Messaging Application Programming Interface. . . . **Alliant Computer Systems Corp.** announced that Chief Executive Officer/President Craig Mundle resigned to accept a position at Microsoft as general manager, advanced consumer technologies.

News shorts, *page 16*

EPA hangs tough

IS escapes federal cuts by passing on layoffs to outsourcer

By Elisabeth Horwitt
RALEIGH, N.C.

Like a seawall in a hurricane, the Environmental Protection Agency's (EPA) 22-year-old outsourcing strategy has once again proved itself to be a staunch bulwark — this time against a particularly nasty round of federal budget reductions.

The cuts, now under way, will leave the agency's small staff of information systems and telecommunications managers virtually untouched. However, EPA contractor Martin Marietta Technical Services, Inc. will be forced to eliminate 100 people from the 400-plus staff it was building to serve the agency, said Don Fulford, director of the agency's national IS division here.

Indeed, Martin Marietta won the five-year, $300 million EPA outsourcing contract away from Unisys Corp. in October just in time to bear the brunt of the cuts, Fulford said.

In the beginning

The EPA began outsourcing its data center in 1974, precisely to gain flexibility in hiring and firing and to avoid the constraints of federal regulations, Fulford said.

Because this round of cuts is being administered to contractors and not in-house personnel, 100 IS positions can be eliminated in about 45 days instead of six months, he added.

"We could do it pretty clean and easy," simply by letting Martin Marietta know that "we are not going to do the following functions," Fulford said.

Hard-hit areas include the mainframe hot line, local-area network help desk functions and the telecommunications group, which lost almost half of its 130 contracted employees.

"It's a godsend to us" that telecom lost people only on the contractors' side, while the 11-person internal staff remained untouched, said David Bittenbender, manager of telecommunications at the EPA.

While outsourcing operations is not, in itself, a less expensive way to process data, speeding up the personnel reduction translates into significant cost savings, Fulford said: "Flexibility is money."

Outsourcing flexibility has served the EPA well in the past. For example, the company was able to eliminate 28 operating positions through automated operations — a move that would have been flat out impossible if the agency had had to go through "due government process," Fulford said.

In addition, the EPA has been able to hire the "critical expertise that is needed [because] a contractor is not constrained by government salary caps," he added.

Ballpark figure

The EPA's current arrangement with Martin Marietta is quite flexible. The $300 million contract is only a ballpark ceiling for what the agency can spend during the next five years, with a guaranteed minimum "that is pretty low," Bittenbender said.

Next year, the EPA will pay Martin Marietta a lot less than the $25 million originally earmarked for annual operations costs, he added.

Furthermore, Martin Marietta's fee each trimester depends on how well it has met predesignated service levels in areas such as network performance, Bittenbender said. "If they don't meet those levels, they lose a big part of their work fee."

The EPA's internal staff of about 50 IS managers and 11 telecommunications managers works with contractors to update the "management work plan" that determines what new technologies, upgrades and systems are needed to meet the EPA's changing computing and networking requirements, Bittenbender said.

He added that his people spend most of their time tracking network policies and standards and planning for future needs. They spend about 40% of their time monitoring contractor activities.

The telecommunications staff stays abreast of the latest changes in networking technologies, standards and policy by attending various conferences and subscribing to various research reports, Bittenbender said.

A plan to link the agency's LANs via frame relay has been put on hold because of the budget cuts, he added.

Table full

In addition to the flexibility, Martin Marietta brings several choice items to the EPA's table, including broad computing and networking experience, Bittenbender said.

For example, the EPA is likely to gain use of software developed internally by Martin Marietta that allows a variety of network devices to feed statistics to IBM's NetView, he added.

Landing the EPA contract was a real "trial by fire" for Martin Marietta, Bittenbender said. Unisys protested the award as soon as it was made in October, which precluded Martin Marietta from hiring anyone until a federal judge resolved the protest in early November.

Martin Marietta had made contingency offers promising potential staff members work if and when the award came through, Bittenbender said.

"Then they had to rescind many of those offers because we sent word that we didn't have as much money as we thought," he said.

EPA outsourcing

Martin Marietta is managing/operating the following:

- **Central EPA data center;** IBM ES/9000 Models 900 and 860.
- **Cray Research, Inc.** supercomputer center in Bay City, Mich.
- **Small data center** in Cincinnati that serves as disaster recovery, another Model 9000 (entry-level model).
- **About 1,700 PCs** (IBM compatibles); 200 LANs (Novell, Inc. NetWare-based).
- **Nationwide network** connecting EPA facilities, state capitals. Combines dedicated lines, 56K to 1.5M bit/sec., plus one 45M bit/sec. link on the way; growing Integrated Services Digital Network installation for voice; X.25 for data.
- **Network management:** hodgepodge of IBM's NetView and LAN Manager, Digital Equipment Corp.'s DECmcc, proprietary systems.

EPA's David Bittenbender: *'It's a godsend' that his 11-member internal staff remains untouched*

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DEC plans integration unit

New business groups, product cuts key to profitability

By Melinda-Carol Ballou
MAYNARD, MASS.

In an effort to help offset shrinking hardware revenue, Digital Equipment Corp. is expected to announce this week that it will increase its emphasis on systems integration services offered across new business units, according to sources close to the company.

As a part of the shift in focus — and in an effort to cut costs behind the scenes — the company is quietly finalizing retirement plans for as many as 250 products, according to internal and third-party sources.

Several third-party sources said DEC is talking with them about the potential sale of 20 to 250 products. DEC officials said they will offer ongoing support or smooth migration for customers who require it, but they would not comment on which products will be affected.

Chief Executive Officer Robert Palmer acknowledged earlier this year that hardware will increasingly become a commodity market and that to yield profits, the company must focus its efforts on systems integration, consulting and "product areas where the company can differentiate itself."

Alpha hurts VAX sales

One challenge DEC faces is that its Alpha platform offers nearly three times the performance for the same price as comparable VAXs. Hence, faced with lower margins on hardware and fewer hardware sales, DEC hopes to overcome this negative through an increased emphasis on systems integration and consulting.

Palmer is likely to detail DEC's new business organization this week, along with the names of those in charge of the various groups. Systems integration will be a "critical area that will cross all of the business units," said a DEC spokesman, who refused to comment on the details.

Four horizontal organizations servicing the business units will include systems integration and professional services, engineering, manufacturing and sales/channels, sources said.

The new management structure will include (product- and industry-specific) business units responsible for their own profits and losses.

"The new structure will not just mandate but will reposition systems integration and consulting services as lead components in the solutions," marketed by the business units, according to one DEC source.

DEC will be less publicly forthcoming, however, about the fate of products that are going to be essentially retired from its portfolio but will tell users directly, a spokesman said.

Remaining DEC software products will include those that enable users to glue disparate systems and applications together on the one hand, such as Network Application Support (NAS) or Teamlinks, and production applications such as ACMS or Rdb on the other, DEC sources said.

And DEC is already beginning to break the news to users.

One Swiss user was told by DEC account managers that a transition to Microsoft Corp.'s suite of office products from DEC's DECwrite and DECpresent products would be required, according to Lynn Berg, a director at Gartner Group, Inc., a market research firm based in Stamford, Conn.

Stephen Tihor, assistant research scientist at New York University, said as long as DEC offers good transition paths, customers are likely to retain their commitment to DEC. "But if these sorts of hurdens happen too frequently, DEC will lose business."

New lineup

DEC's new organization will include the following: product-specific business units (PCs, storage, components and multivendor services) and industry-specific business units (process and health care industries, discrete manufacturing and defense, financial and professional services and communications and consumer industries).

Maryland agency saves big by melding data centers

By Johanna Ambrosio
ANNAPOLIS, MD.

■ The comptroller's office in the state of Maryland is putting the finishing touches on a consolidated data center that is expected to save $29 million during the next five years.

In addition to saving money by eliminating duplicate software licenses and host machines as well as 68 jobs, the consolidation allowed the state to shutter its Baltimore data center in May and move all operations to a single site here.

A new IBM Enterprise System/9000 Model 740 replaced both the 3090-600E residing in Baltimore and the 3084Q that used to reside in Annapolis.

Besides handling the processing for the comptroller's office, the Annapolis data center now supports the departments of human resources, employment, health, social services and other agencies. The departments of transportation, public safety and corrections have their own data centers, which are all connected to one another and to the Annapolis center.

The consolidation, begun in October 1991, was undertaken in response to the governor's request that all state agencies trim their budgets.

"It just became obvious, mostly because of the larger mainframes becoming available, that one processor could handle the work load," said John Salmon, deputy director at the data processing division of the comptroller's office. "This would not have been possible several years ago."

Speed of implementation was a crucial factor, said chief deputy controller J. Basil Wisner. "We had told the governor that we could reduce our budget by $5 million during the next fiscal year, which began July 1, and he took us at our word and reduced our budget accordingly. So we had to have everything completed or we would have run into financial problems," Wisner said.

Deadline pressure

Instead of putting the equipment out to bid — the normal procedure for a state agency — the tight deadline led the office to amend an existing IBM contract to take the new machine into account.

Another time-saver, Salmon said, was that the Annapolis data center had been built two years earlier to meet the state's needs 10 years out. It had a ready-made space for the ES/9000's larger footprint and higher power requirements.

The state is finishing up by installing some automated operations software from IBM, Candle Corp. and Landmark Systems. That project should be finished in January, Salmon said.

Plans are already in the works for the next upgrade, slated for January 1994, to a Model 820. The exact timing of that depends on a project being piloted by the human resources department that will deliver more information for case workers to determine the eligibility of people who apply for public assistance.

Windows link to pagers aids LAN troubleshooters

By Joanie M. Wexler
TROY, MICH.

A communications link between Microsoft Corp.'s Windows 3.X operating environment and mobile users' pocket pagers is slated to ship this week, bringing benefits such as split-second network troubleshooting and the ability to "beep-enable" any Windows application.

Beta testers of Fourth Wave Technologies, Inc.'s $149 WinBeep wireless messaging system — a communications package that runs under Windows — said the software eliminates the time-consuming phone tag and in-person visits that now occur when employees respond to a page.

For example, Bankers Trust Co. in New York has been testing WinBeep for about a month, and computer analyst Evan Hochstein estimated the firm has saved about 200 minutes a day in network troubleshooting.

The savings come from dispatching instructions directly from a PC to one or more alphanumeric pagers carried by wandering technicians or other mobile personnel, who can view messages and take immediate action.

"The bottom line is that our support is now immediate," explained Hochstein, who said troubleshooters are now en route to a user site 30 to 50 seconds after notification. "We trade money all over the world all day long. If a guy's machine freezes, we lose money. The less he's down, the more we make."

Right to the source

Beta-test site LAN Solutions, a systems integrator in Ferndale, Mich., hopes to someday deploy the technology throughout its customer base so clients can message the firm directly.

"Our customers will be able to leave us a brief description of the problem and tell us whether they're in deep doo-doo or the fix can wait," said Jerry Svetcos, an engineer at the company.

Fourth Wave President Tim Hudson said a developer's kit is available that "allows you to beep-enable any application." For example, he said, a maker of local-area network monitoring equipment is working on allowing a tape backup system to automatically send an alert to someone's pager if a backup aborts.

Also, a fax board vendor is working on permitting traveling fax recipients to download their faxed messages via a pager.

Hochstein said he has spoken to developers about automating WinBeep so that, for example, "if an error pops up on a file server, it is automatically broadcast. Currently, a person sees the error, then places a call to page the troubleshooter, who must call back. This would save us a lot of time and money."

The WinBeep application is currently a one-way communications link, but it is slated to connect with the interactive Ardis and RAM Mobile Data wireless packet networks and the Embarc cellular data network in the first quarter of next year, according to Hudson.

Reach out and beep someone

An estimated 12 million to 13 million pagers are in use in the U.S. today.

Analysts estimate the percentage of those having alphanumeric displays to be from 6% to 20%.

An estimated 50% of pagers now being manufactured are equipped with the alphanumeric capability.

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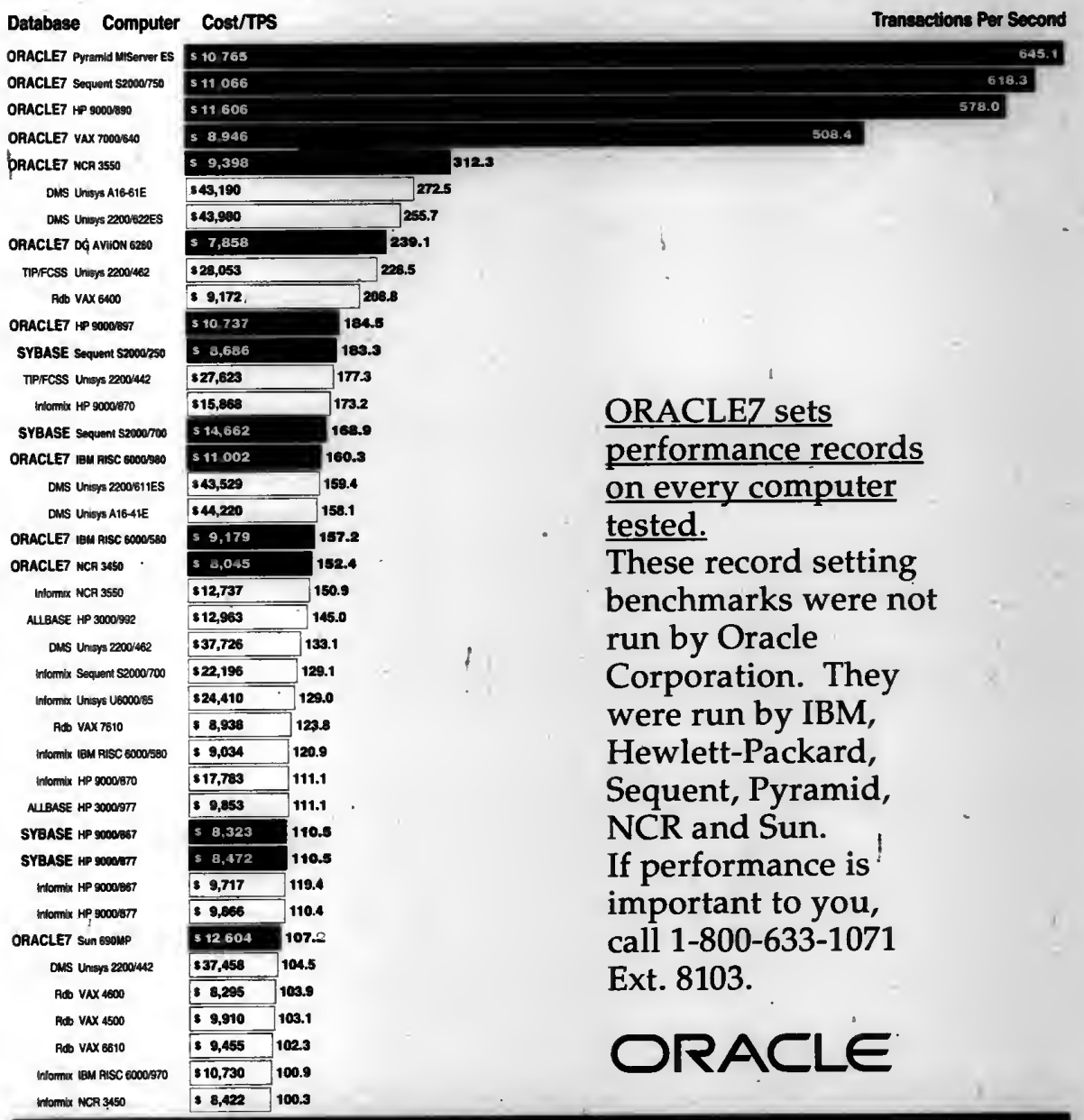

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Microsoft DOS licensing faces UK scrutiny

By Mike Magee
LONDON

Following complaints from several British hardware manufacturers, the UK government has moved to investigate Microsoft Corp.'s DOS licensing practices.

Member of Parliament Nigel Griffiths, the Labour Party's spokesman on consumer affairs, confirmed last week that he will pass a dossier on Microsoft's UK activities to the Office of Fair Trading (OFT) government department. OFT is the UK equivalent of the U.S. Federal Trade Commission, which is winding down its own investigation of Microsoft [CW, Dec. 14].

Griffiths, who has received complaints from vendors, had previously tabled two written questions in the House of Commons asking the government to investigate Microsoft's supply and charging practices.

Microsoft formerly sold MS-DOS to its UK customers through two channels – a high-end licensing scheme for large OEMs and in units of 20, 50 or 100 to smaller IBM PC clone makers. Late last month, more than 400 UK companies received letters inviting them to join the Microsoft Easy Distribution plan.

The Microsoft plan commits vendors to paying royalties for every Intel Corp.-based 80286, 80386, I486 or Pentium PC they ship, whether they are DOS machines or not.

If they decide not to sign up, they face paying more for DOS because Microsoft will change its UK pricing from pounds sterling to U.S. dollars.

Griffiths likened the arrangement to a scenario in which a company that is paying a 5-cent-per-bottle royalty on every Coke sold in the UK is suddenly asked to pay 5 cents on every other bottle it sells, even if it contains milk or fruit juice.

"This is the back end of a had monopoly," said Mark Travers, production manager at Edinburgh-based Datalink Computer Systems. "It's like Microsoft wants a percentage of every PC in the world, whether or not you're using the company's software on it."

Magee is a free-lance writer based in London.

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Paramount to open multimedia unit

By Jean S. Bozman
PALO ALTO, CALIF

Paramount came here, not to Hollywood, for its latest production: a brand-new business unit designed to soak up Silicon Valley's multimedia technology and mold it into new types of entertainment and educational materials.

Paramount Communications, Inc. plans to acquire and license various technologies, including multimedia, digital compression algorithms and interactive video. But the $4 billion firm will also fund some new ventures with several million dollars in seed money and may decide to sell technology to users in the future.

"Our primary role will be to evangelize, to educate and to implement technology in all of our existing businesses," said Keith Schaefer, president of the new Paramount Technology Group.

Final frontier

Schaefer said the first applications would most likely come in electronic publishing at Paramount's Simon & Schuster, Inc. publishing division in New York and in interactive video software based on Paramount movies and television shows.

Instead of waiting for *Star Trek* shows and movies, which are Paramount properties, PC users will be able to fire phaser weapons in interactive video games based on scenes from those shows.

"We're going to bring all the content from the motion pictures group, from the television group and from sports figures on the [New York] Knicks and New York Rangers into multimedia," Schaefer said.

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Big Blue struggling on

CONTINUED FROM PAGE 1

too little, too late?

IBM executives have been talking since at least 1987 about the need to depend less on hardware revenue, but this has proved to be an elusive goal.

For the year ended Dec. 31, 1991, IBM derived 36% of its revenue from software and services, vs. 30% the year before.

Large systems — computers, storage devices and software — account for half of IBM's revenue and two-thirds of its profits.

Ominously, mainframe growth is expected to be in the low single digits for the foreseeable future. This is forcing IBM into riskier, lower margin businesses, including PCs, in which IBM has had mixed success.

> "We haven't seen an IBM salesman in over a year. Maybe they don't even know we exist anymore."

Feel the heat

In short, IBM is in hot water, and company officials appear to be feeling the heat. Although they declined to comment for this report, evidence comes in the form of last week's decision to cut 25,000 jobs and cut manufacturing capacity — moves that will cost the struggling company $6 billion.

If early-retirement packages fail to entice, the company said it would resort to its first layoffs in approximately 50 years.

IBM also took steps last week to bolster the autonomy of three previously spun-off units — the IBM PC Co., the Adstar storage unit and the Pennant Systems printer division (see stories below and on 13). Some of these units, including the IBM PC Co., will undoubtedly get their own sales forces sometime down the line, some industry watchers speculated.

Poor response

Analysts are largely unimpressed. What IBM should have announced, they said, are immediate layoffs of at least 50,000 people, a reduction of its sacrosanct dividend and plans to cut the umbilical cords of even more of its business units, leaving them to succeed or fail on their own.

"Another year has been wasted in repositioning the company for the future," said analyst Bob Djurdjevic, president of Annex Research in Phoenix. "IBM has to organize around the customer and come out with solutions targeted at specific market niches — [such as] a mainframe for the aerospace industry."

Other analysts suggested IBM is cutting too much out of key areas.

"You can save yourself all the way to bankruptcy," said Jim Cassell, an analyst at Gartner Group, Inc. in Stamford, Conn. "If you continue to chase the expense line and invest less in generating demand, there's less differentiation later, so customers don't buy as much."

BOYCE DAWKS

Bankers Trust's Anish Mathai: *IBM more competitive now than a year ago*

In the meantime, IBM has certainly made up some ground with many of its largest customers. Besides an increased willingness to negotiate on price, customers said they have also noticed that IBM sales representatives are listening more to what they need instead of simply telling them what they have to sell.

"IBM is substantially more flexible to work with," said Anish Mathai, vice president of technology strategy planning at Bankers Trust Co. in New York. "They are absolutely more competitive than they were a year ago on all fronts, from marketing to pricing."

Bill Dean, director of technology management services at Pepsico, Inc. in Purchase, N.Y., agreed that IBM is trying. "When we go out for a bid, they will move heaven and earth to respond in a timely and competitive format."

He added that IBM won two major systems integration projects at Pep-

Time out

1986: IBM STARTS 87 EARLY-RETIREMENT PROGRAMS.
6/91: IBM FORMS ISSC.
12/91: IBM REPORTS FIRST ANNUAL LOSS OF $2.83 BILLION; CREATES 13 BUSINESS UNITS. CARL CONTI, VP AND GM, ENTERPRISE SYSTEMS, TAKES EARLY RETIREMENT.
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12/92: STEPHEN SCHWARTZ, VP AND GM, APPLICATION BUSINESS SYSTEMS, TAKES EARLY RETIREMENT. IBM TO REDUCE HEAD COUNT BY 25,000 BEYOND THE 40,000 JOBS CUT IN '92.

'Dear John' letters

ANDY FREEBERG

Here is some advice that IBM customers — some anonymously through a Computerworld survey — wanted to pass along to IBM Chairman John Akers.

"IBM should reinstate their service level closer to what it used to be. They charged a 20% premium for their service, but I didn't mind because I got great service. Now, all the good service techs are gone. This is the main reason why I went elsewhere lately and spent $3.2 million." — *Mainframe/midrange/micro customer of 15 years or more.*

"If there's an order-of-magnitude more powerful processor, rather than extend the old life cycle, bring the new one to market more quickly." — *Doug Underhill, vice president, CSX Technology, Jacksonville, Fla.*

"Go back to IBM's approach of the early 1970s: a team of sales, engineering and systems analysts assigned to an installation until the job was complete." — *Midrange/micro customer of six to nine years.*

"Get the hell out of the mainframe business and into services." — *Bill Dean, director of technology management services, Pepsico, Purchase, N.Y.*

"Stop losing experienced, valuable people and replacing them with unschooled, inexperienced people. And go to smaller companies within the corporation." — *Midrange customer of 15 years or more.*

"Do a better job on your PC LAN software. Make more powerful products, or we'll have to go to Novell like the rest of the world." — *Mainframe/micro/networking customer of 15-plus years.*

"Don't think you set the standard anymore. You're now part of what's set, and you have to uphold that." — *Irwin Bernstein, vice president of planning and administration, Maidenform, Inc., Bayonne, N.J.*

"Buy Apple." — *Midrange/micro customer of 10 to 14 years.*

"Buy Microsoft. Understand midrange computer systems users and how they use their AS/400s. We're not a 9 to 5 organization, and we require 24-hour nonstop backup." — *Midrange/micro/networking customer of three to five years.*

IBM PC Co.: Case of bad timing

By Michael Fitzgerald
SOMERS, N.Y.

■ Three months after its birth, IBM watchers say the IBM PC Co. is a good idea that came a bit too late.

While it is clearly moving toward wiping the tarnish off the IBM label in the PC market, critics harped on IBM's timing. They said IBM waited too long to unveil the IBM PC Co. and its so-far-successful ValuePoint line and missed a huge opportunity to generate sales on the low end.

Robert Corrigan, IBM PC Co. president, seemed to concede as much at Comdex/Fall '92 when he told reporters that IBM's PC side had taken "such a beating in the third quarter" it could take most of next year before it contributes profits to IBM corporate. Corrigan and other officials declined to be interviewed for this article.

But before it can hope to boost profits, IBM PC Co. must first regain the confidence of users by establishing a consistent track record.

IBM PC Co. was born with the intent of reinvigorating IBM's PC business. Lurking in the background was the unavoidable need to convince corporate customers that it was capable of being a long-term player. The game plan seemed obvious: Produce good products at competitive prices and innovate when it suits customer needs. IBM had lacked these qualities in the past.

Revamped service and support, competitive products and the aggressively priced technology leadership evident in the ThinkPad 700C are some of the reasons IBM is racking up sales under the newly autonomous division, analysts said.

"I have to say I'm really impressed with the PC side of things. They seem to realize that just rolling out products with those three letters doesn't bring any magic," said Richard Kolbe, MIS director at Harley-Davidson Co. in Milwaukee.

However, many users contacted said they remain skeptical of real change at IBM. "They fail to realize that particularly [on the] desktops, they're not the only game in town anymore," said Bill Dean, director of technology management services at Pepsico, Inc. in Purchase, N.Y.

Observers said IBM has turned the corner here, and customers seemed to agree, as preliminary data from researchers shows that IBM has at least stopped losing market share. Data from Computer Intelligence in La Jolla, Calif., and the *Computerworld* Database Division shows that IBM's PC share decline has finally leveled off, while a recent study from WorkGroup Technologies, Inc. showed a 20% increase in IBM's recent hardware sales. Still, IBM is not experiencing any significant rebound in share and may have succeeded only in making users consider it again.

Even the Personal Systems Programming group, which remains tethered to IBM corporate, has made efforts to change. It has found undeniable success in the market, though the 2 million copies of OS/2 it sold this year pale next to sales of Microsoft Corp.'s Windows 3.1.

sico that did not include any IBM equipment. "They competed on the basis of price, and won."

Maidenform, Inc., in Bayonne, N.J., did not have any IBM disk drives for about 10 years, but it recently bought some, said Irwin Bernstein, vice president of planning and administration. "They'll reduce the price and throw in free service," he said. "They have ways of sweetening a deal they didn't have before."

Not all customers agree they have seen that much of a difference. "We haven't seen an IBM salesman in over a year," complained Larry Stouffer, vice president of the computer services group at First Bancorp of Ohio. "Maybe they don't even know we exist anymore."

Tom Loane, vice president at Alamo Rent-a-Car, Inc. in Fort Lauderdale, Fla., said that even though "not much has been accomplished yet," IBM at least has not seriously messed up its customer relationships like AT&T did when it divested back in 1984. "It took AT&T two years to get its act together, with a six-month backlog on everything. That hasn't happened here."

Nor has IBM done all it can to get its prices to the lowest levels possible. "They are still out of line when they go head to head with other vendors," said Tom Braswell, vice president at Genuine Parts Co. in Atlanta. "If we have to pay a premium, we expect value-added services."

Most observers agree that 1993 will be key for IBM as it seeks to capitalize on many of the changes wrought during the last few years (see time line page 12). Still, it could take it another year or even two to realize the fruits of what must rank as one of the most wrenching changes in its entire corporate history.

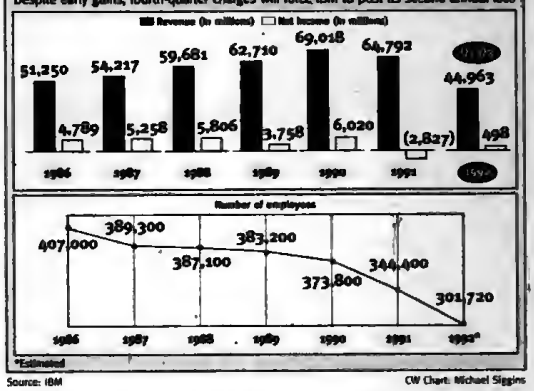
Some industry watchers, however, are still upbeat about IBM's chances in the 1990s. "As the fittest [of the lines of business] survive, you will see a more nimble and accomplished IBM," said Sam Albert, an analyst in Scarsdale, N.Y. "The Darwinian selection process will continue."

Mid-Atlantic correspondent Thomas Hoffman contributed to this report.

IBM's cost cuts include:
- Reduce worldwide work force by 25,000.
- Reduce manufacturing capacity in mainframes, storage devices and semiconductors.
- Cut capital spending and research and development by $1 billion each.
- Give the storage, printer and PC businesses more autonomy.

Stuck in reverse

Despite early gains, fourth-quarter charges will force IBM to post its second annual loss



Source: IBM

CW Chart: Michael Siggins

ISSC no role model

Though IBM's Integrated Systems Solutions Corp. (ISSC) has been touted by some observers as a model in Big Blue's ongoing decentralization, it may not be a paragon example, outsourcing watchers said.

The unit, whose revenue is made public, may never have been intended to be a profit center but rather a mechanism for cementing account control and channeling business to other IBM units, observers contend.

Although IBM's competitors in the outsourcing business complain that ISSC wins deals because of its special business relationship with IBM's operations, outsourcing industry watchers gave the subsidiary a mediocre report card.

"They started out with a bang, but it has slowed down," observed Jean Paul Richard, vice president of market research firm Input in Vienna, Va.

Part of the reason for this may have to do with some customers' reluctance to trust IBM in a pure consulting capacity. "A hardware vendor as a consultant does not have my best interest at heart," said James Glump, senior vice president of information services at Actmedia, Inc. in Norwalk, Conn. "It's still IBM; it's still one company."

Gartner Group, Inc. analyst Rita Terdiman pointed out that the absence of a dedicated sales force has created confusion among potential ISSC clients.

"I had a client complain that they received three different bids from IBM," Terdiman said. "They got disgusted and threw IBM out totally."

Ironically, IBM's competitors complain that ISSC's use of IBM's sales force is an antitrust breach that gives the company an unfair business edge. IBM formed its outsourcing subsidiary in May 1991, in part to quicken its response time.

ISSC's largest wins include what was to have been a nearly $300 million deal with Zale Corp. in Irving, Texas, and a $400 million contract with Continental Bank Corp.

For ISSC to prosper, some observers said the unit should get additional autonomy. Bob McMullen, chief financial officer of The Bisys Group, Inc., an outsourcer in Little Falls, N.J., suggested that IBM sell all or part of the company in a public offering, a move that IBM is considering, according to published reports.

"The perception is better among potential services customers if it's a services company, not a hardware company," McMullen said. "It would look stronger if it was a company unto itself."

The bottom line for many analysts is that IBM may not want to use ISSC as the model for other parts of the company. "The outsourcing business itself is a different model from making hardware," observed Leonard Bergstrom, vice president of Real Decisions, Inc., a Darien, Conn., firm specializing in measuring information systems and outsourcing performance. Product companies have vastly different infrastructures and cost elements than do service companies, he said. —*Mark Halper*

IBM strategy questions abound

CONTINUED FROM PAGE 1

It will certainly heat up early next year when the AS/400 is expected to add a reduced instruction set computing (RISC)-based I/O processor and broaden its "openness" appeal with support for Posix interfaces and the Open Software Foundation's Distributed Computing Environment (DCE).

Meanwhile, the RS/6000 team is building up its number of robust commercial applications and adding mainframe-class software such as CICS to the AIX Unix operating system.

Promises to keep

IBM has promised to enhance the RS/6000 and AS/400 product lines at both the low and high ends, and by 1996 both platforms may run on the same chip. Application Business Systems (ABS), the business unit in charge of the AS/400, and the Entry Systems line of business, which controls the RS/6000, already share many development costs — including expenses to build the PowerPC chip. PowerPC engineering falls to IBM's joint venture with Apple Computer, Inc. and Motorola, Inc.

Largely untouched in last year's reorganization, the AS/400 and RS/6000 units were rebels before the revamp and remain so now.

Many large AS/400 sites are happy with their systems despite the "openness" dogma they hear from Unix makers, including RS/6000 evangelists. "We haven't found anything [AS/400] cannot connect with," said Ron Sieman, vice president of information technology at Royal Caribbean Cruises Ltd. in Miami.

For example, ABS ran against IBM's internal "mainframe first" mind set earlier this year in the redundant arrays of inexpensive disks (RAID) arena. ABS beat the IBM mainframe group to the RAID punch by courting Adstar, IBM's storage company.

The kind of entrepreneurial spirit that IBM is trying to clone in its other lines of business has kept an AS/400 shipping every 12 minutes and catapulted the 2-year-old RS/6000 workstations and servers into the No. 3 market position for worldwide Unix system shipments.

Profitwise, the AS/400 clearly leads with its $15.5 billion in revenue projected for 1993. The RS/6000 has only eased into profitability this year, with $2 billion in revenue.

Despite such successes, problems loom: The duo increasingly pursues the same customer sets, especially mainframe downsizers; and both target many of the same resellers and third-party developers.

And the AS/400, with its poor PC connectivity and high-priced tiered software, may already be losing its grip on the commercial market in Western Europe.

At the same time, the RS/6000 is still "very immature" in software, system management facilities, scalability and other commercial attributes, said Myron Kerstetter, an analyst at Gartner Group, Inc. in Stamford, Conn.

> IBM has promised to enhance the RS/6000 and AS/400 product lines at both the low and high ends.

Indeed, users such as Samsonite Corp., which recently weighed a choice between the two rivals for a database application, rejected the faster performance of the RS/6000 in favor of the easier management of an AS/400.

If IBM envisions more technology sharing between the RS/6000 and AS/400, it would be wise to meld them carefully to avoid creating a skittish installed base on both sides, analysts and users cautioned.

Wholesale swaps of one platform for the other seem highly unlikely. "If you believe in one, you're not likely to believe in the other," said Charles Greene, MIS directory at Pace Foods, Inc. in San Antonio, which is looking to upgrade its AS/400 Model D40.

High-tech leaders ask Clinton for quick action

By James Daly
LITTLE ROCK, ARK

■ Leaders of the nation's embattled high-tech industry gave President-elect Bill Clinton a piece of their mind at last week's summit by writing an urgent prescription for curing the country's economic ills and increasing its competitiveness.

Clinton proved himself friendly to the computer industry during the campaign when he outlined a national technology policy. Now many executives want him to move rapidly on his plan without getting bogged down in the typical quicksand of government.

"I applaud the fact-finding that you're doing, but . . . get on with making decisions as fast and quickly as you can," urged Autodesk, Inc. President Carol Bartz.

Some consider Clinton's high-tech initiatives a critical catalyst for fueling the country's economic engine. "Fifty percent of this country's economic growth since World War II has come from the technology-based industry, yet we have not had a consistent and well-understood technology policy," said Sandra Kurtzig, president of The ASK Group, Inc. in Mountain View, Calif., who attended the two-day summit.

Clinton's high-tech policy includes establishing a civilian advanced technology agency modeled on the Defense Advanced Research Projects Agency that focuses on emerging industries such as robotics, high-speed computing and environmental technology; building a national fiber-optic data network by the year 2015; research and development tax credits; a 50% cut in the capital gains tax on long-term investments in new business; and educational initiatives that include a continuing education program and apprenticeship programs.

Call to order

In a format that resembled a session of the U.N. Security Council, Clinton and Vice President-elect Al Gore called together 300-plus business executives and academics for a session designed to provide their administration with a running start on how best to address the global economic challenge.

Suggestions from the high-tech leaders included the following:

- Ease credit policies and bank regulations so cash can flow quickly and easily to emerging companies.
- Control the flood of lawsuits facing American business, particularly the knee-jerk complaints often filed after reports of a down fiscal quarter.
- Toughen penalties on software piracy.
- Increase the access to capital for businesses owned by women and minorities. Offer regional directors the ability to authorize the dispersal of federal loans, rather than waiting for a sign-off from Washington.

Apple Computer, Inc. Chief Executive Officer John Sculley trumpeted the need for a revamped public education system designed to give students the skills required for success in a highly automated society. "We are still trapped in a public education system that is preparing our youth for jobs that no longer exist," Sculley said.

The U.S., Sculley said, is at a major economic "turning point," similar to its late 19th-century transformation from an agricultural-based economy into an industrial one. He said the country needs a major transition from the highly centralized assembly-line production of the Henry Ford era to decentralized firms such as those in Silicon Valley.

The marathon economic summit also converted some Clinton skeptics. Kurtzig said she was impressed with Clinton's and Gore's command of technology issues. "Their intellectual grasp of the issues and breadth of knowledge was very impressive," she said.

Others tried to temper the meeting's general upbeat mood with a splash of cold reality. Cray Research, Inc. Chairman John Rollwagen said the goodwill generated at the summit could easily evaporate once difficult economic policy decisions are made.

Sun merges Sitka, SunSelect units

Move could boost network profile

By Elisabeth Horwitt
MOUNTAIN VIEW, CALIF.

Sun Microsystems, Inc. last week said it is merging its Sitka Corp. and SunSelect divisions into a single PC networking unit charged with taking on the likes of Microsoft Corp. and Novell, Inc.

Sitka, historically an Apple Computer, Inc. Macintosh connectivity company that expanded into PC networking, will lose its name and be folded into SunSelect "to strengthen Sun's position in the open networking market," said Carl Ledbetter, SunSelect's general manager.

> Sun officials said the new unit will provide users with one-stop shopping for Sitka and SunSelect products

Sitka is "a well-kept secret" that, with Sun's name behind it, could well compete with the PC networking giants, said Karen Scherberger, acting director at Westport, Conn., consulting company New Science Associates, Inc. The Sun division's main strength is a "cross-platform networking strategy" that is more open than the Novell or Microsoft offerings, she added.

Sun officials emphasized the benefits of providing users with one-stop shopping that would encompass both Sitka's multivendor "peer-to-peer" networking products and SunSelect's client/server, PC-to-Unix offerings. A single sales and marketing organization will work with value-added resellers to "implement the most appropriate solution," Ledbetter said.

What is missing from the equation, however, is any technological synergy between the two Sun networking arms, Scherberger said.

Sun has "no intent to merge technologies" across Sitka and SunSelect product lines, Ledbetter said. "We think they serve two customer sets."

The transition is scheduled to take effect Dec. 28, Sun said. Deborah Triant, Sitka's president and chief executive officer, will move to another part of Sun, as yet undecided on, she said. The company will be based in Chelmsford, Mass.

Hard times spur ingenuity

CONTINUED FROM PAGE 1

In the loop

When a company is under a financial thundercloud, IS has to respond to the turmoil of all other departments. IS executives must be in the loop during business reshuffling talks so they are prepared to act quickly when changes come down, said McKinsey & Co.'s Dennis Bowman. Also, a host of IS functions are affected when a firm reorganizes, whether the changes involve shutting a business unit or streamlining the way a product is handled. IS can help, "but only if they are kept up on what's in the hopper," he said.

ogy is what gives companies an edge. Hacking away at the IS department can remove the leg up that could potentially pull the company back to profitability, says Gil Mintz, an analyst at Broadview Associates in New York.

Carter Hawley Hale Stores, Inc. would agree, at least partially. Just before filing for Chapter 11, the Los Angeles-based retailer invested heavily in an integrated computer-aided software engineering workbench so that in-house staff could build programs to handle the deluge of data demands in Chapter 11 filing brings on.

The IS director at another company, which requested anonymity, said it saved between $100,000 and $200,000 by creating Chapter 11-related applications itself, rather than hiring an outside service to help process the information requested by bankruptcy court.

"You have to cut selectively, with an eye toward improving productivity," Bowman explained.

Creative cutting

Cuts do not have to wound, and options should be carefully considered. For example, cost-cutting by renegotiating vendor contracts for price breaks was a hidden benefit of Chapter 11 for some firms. America West Airlines saved between 25% and 50% in operating costs by renegotiating contracts with hardware and software vendors [CW, Oct. 5].

A large East Coast food company saved "several hundred thousand dollars" by talking lessors into more attractive rates, according to the IS director there.

At Hartmarx, along with typical money-saving measures such as layoffs, the company found other surprise glints of silver amid the gloom. For example, an inventory of assets revealed that the company had warehoused several terminals, network controllers and point-of-sale systems, which it quickly sold to hardware brokers.

Then Hartmarx decided it had too much hardware and began consolidating and downsizing two IBM 3084 mainframe data centers into two Application System/400s. The move will cut the operating budget from $13 million this year to half that for 1993, Johnson estimated.

Keeping track

R. H. Macy & Co., which filed for Chapter 11 a year ago, last month unveiled new accounting and merchandise management systems designed to let the struggling retailer closely track inventory disbursement and hone in on which products are selling where.

Macy's management is counting on the new inventory system to jack up cash flow to $800 million by 1998.

Although Chapter 11 is fraught with pressure, it also constitutes a grace period of sorts. It gave some companies, such as Revco D.S., Inc., the time to implement a $50 million IS overhaul. Victimized by a leveraged buyout gone bad, the Twinsburg, Ohio, drugstore chain filed for Chapter 11 in July 1988. It then emerged last June "totally reworked," according to Rich Weber, former director of systems planning and development.

Three functional IS units became two team-oriented groups focused on application development. Executives on both the business and IS sides of the house examined every nook and cranny in the company to determine where they were losing out to competitors and how technology could win back consumer favor.

Perhaps the most positive by-product of this gloomy time was improved communication between the front and back offices.

"We knew what we were doing was fighting for the survival of the company," said Weber, who has since been laid off.

Operation Restore Hope

Media counts on technology in Somalia

By Rosemary Cafasso

Operations executives at the major television networks are accustomed to supporting staff members who are in the field under harsh conditions. But the current operation in famine-ravaged Somalia has stretched their skills to new levels.

"We have never had to work in a situation where there was absolutely nothing," said Michael Duffy, vice president of operations at ABC.

Network executives said they do not remember managing such a large-scale operation from a location that has virtually no infrastructure and lacks the most basic necessities of food and water. As a result, the networks were required essentially to build high-tech news operations from scratch to gather and disseminate their dispatches from compounds near Mogadishu and its airport.

While the Persian Gulf war coverage was more complex and demanding, staff members could at least sleep in hotels, and many had access to telephones, electricity and running water. And as long as they played by the rules, reporters could remain relatively safe.

By contrast, the early network teams that arrived in Somalia before the U.S. military had to pay locals to serve as their armed security guards.

To do their jobs in Somalia, ABC, CBS, CNN and NBC simply brought everything with them. Everything. Their gear included portable satellite dishes, laptops, portable telephones, generators and gasoline, food, drinking water and even portable bags of water that can be torn open for showers.

Suitcase satellites

At the heart of the networks' operations are the portable satellite dishes. These devices, which CNN estimated cost around "a quarter of a million dollars," are collapsible units that can fit into oversize suitcases and be lugged around in the back of a four-wheel-drive vehicle. The setup process takes about two hours, and the different types of dishes measure from 5 feet to 11 feet or 12 feet in diameter.

CNN and ABC are broadcasting video from these devices, while CBS is using a similar but larger dish along with a conversion device that allows voice and data to be transported as well.

Don DeCesare, vice president of operations at CBS, would not divulge the source of this proprietary technology because he claimed it gives his network the edge over its competition. For example, the device allows CBS reporters to submit their stories directly to headquarters in New York.

The other networks, including CNN and ABC, said their reporters were using laptops to write broadcast scripts and were then either faxing them or dictating them over the telephone to their home offices.

Dick Tauber, director of satellites and circuits at CNN, said he is familiar with the CBS gear. "I wish we had that equipment," he said.

The networks are also relying on portable telephones, which fit into a suitcase-size package and come with their own tiny satellite dish. The device, called an Inmarsat, was originally designed for use aboard ships.

While the Inmarsat phones come in handy, they are a killer expense, costing nearly $10 per minute to use. "And we use them like crazy," Duffy said.

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News Shorts

Two get Baltimore computing award

Judging for the first annual Baltimore Information Technology Award resulted in a tie, so the award was presented to two winners at last week's Baltimore Computer Conference. Michael Griffen, deputy director of data processing at the Maryland Department of the Environment, won for his work on a Superfund information system that has allowed the state to recover nearly $1 million from polluters. Ronald J. Sanders, manager of marketing/administrative systems at Crown Central Petroleum Corp., was recognized for installing a store management system that automates what was a labor- and paper-intensive reporting process at more than 400 stores.

House panel rips USPS on privacy

A congressional report blasted the U.S. Postal Service for sharing its change-of-address database with direct mail companies that use it to send junk mail to "new movers." The House Committee on Government Operations said the practice disregards the privacy interests of people who want to keep their address confidential. Patrons should be able to check an "opt-out" box on the change-of-address cards to block the disclosure of their new address to third parties, the report said. Postal Service officials said that sharing the database helps mailers reduce the amount of misdirected mail, and they opposed the "opt-out" recommendation.

Informix chairman resigns

Informix Software, Inc. Chairman Roger Sippl resigned his post last week, citing an interest in new business ventures. The firm said Sippl, 37, who co-founded Informix in 1980, relinquished his role as chief executive officer in 1989. Phil White, who became CEO in 1989 and president in 1990, was elected chairman by the Informix board of directors last week. Sippl also had a role in founding the SQL Access Group, an industry standards group, in 1989.

SNA rivalry intensifies

Proteon, Inc. announced what it claims is a better way to ensure that IBM Systems Network Architecture traffic does not get bumped off an internetwork by local-area network traffic. In contrast to **Cisco Systems, Inc.** and **Wellfleet Communications, Inc.**, which are fitting their routers with the ability to prioritize SNA traffic, Proteon's Internetworking Traffic Management software's "bandwidth reservation" allocates specific bandwidths to up to 10 applications, so that no one type of transmission can hog the whole link, Proteon said. Another key feature of the software, which will ship in the first quarter of 1993, is NetBIOS filtering, which directs NetBIOS traffic to specific target addresses instead of clogging up the internetwork by trying to locate the device they want to access, Proteon said.

SHORT TAKES **Storage Technology Corp.** warned Wall Street last week that it expects its fourth-quarter financial results to fall below analysts' expectations. The $1.5 billion firm cited slow sales of its flagship line of automated tape libraries, as well as restructuring costs, as factors. ... A recent national survey found that 33.6% of companies plan to increase the size of their information systems staffs in the first half of 1993, a 2.2% decrease from projections for the first half of 1992. The poll, conducted by the CompuSearch recruitment firm, showed that 13.1% of the companies surveyed plan to reduce their IS staffs. ... **AT&T** announced plans to invest $222 million for a 30% stake in a $740 million trans-Atlantic fiber-optic network designed to transmit voice, data and video between the U.S., France and the UK. The network, called the TAT-12/TAT-13, will be able to transmit up to 320,000 simultaneous phone calls.

User pricing ties HP in knots

CONTINUED FROM PAGE 1

Holt, director of research and development at Software Research Northwest, Inc., a Vashon Island, Wash., vendor of higher education administrative software.

"User-based pricing is not a trivial subject," observed Rich Sevcik, general manager of HP's systems and server group, an approximately $3 billion minicomputer operation. His software partners agreed with that assessment.

> Software companies tend to prefer different models depending on whether they sell applications, tools, system software or databases

"There is more in this subject than you'll ever want to know," said Peter West, vice president of marketing at The ASK Group. "There are lots of technical and business issues we have to work through."

One of the most fundamental challenges HP faces is coordinating its pricing model with that of its software partners. For instance, to avoid confusing users and to minimize potential revenue havoc for itself and its partners, HP must strive to establish number-of-user categories that are consistent with those its partners use.

"If the application is a 20-user license and the operating system is a 10-user license, the user could end up buying an application license he can't use," West said.

Agreement key

Getting all partners to agree to consistent user categories is a potentially huge task, considering that even a small tweak to a software company's pricing scheme could radically alter the vendor's revenue stream.

Complicating matters, Sevcik noted, is that software companies tend to prefer different models depending on whether they sell applications, tools, system software or databases.

Even within HP, different product groups throughout the minicomputer and workstation operations may have preferences that do not match those of other HP product groups, said Jim Geisman, president of Marketshare, Inc., a Wayland, Mass., consulting firm.

"There's been some difficulty getting internal groups to buy into user-based pricing," Geisman said. "They're wondering if they're going to take a revenue hit."

Another element around which HP hopes to establish uniformity is software monitoring. HP has chosen to use its own Network License Software, or NetLS, to monitor software use. If its partners were to choose other monitoring programs, users would have to cope with inconsistent measurements across different programs.

"If we chose a different program from the one HP is using, then the customer has to use two license managers. That's not too clever," West said.

As the hard work sets in, the parties must not lose sight of the intention of user-based pricing, Sevcik and others noted. "It gives potential to customers to buy a license from HP that gives them the ability to run fewer users than the theoretical limit of the machine," West said.

Hard choices

The plethora of other issues that HP and its partners must iron out before swinging full gear into user-based pricing includes the following:

- **How to count users:** Some vendors want to stick with a strict model that identifies the users by name. A more flexible approach would specify a number of users whose identities are transferrable.
- **Resolving network issues:** Software vendors must decide whether a company could use a license in one location and then send the program over a network to a different location.
- **Peak use:** Vendors disagree over how to charge a shop that loads up on users for short spans only. Some vendors would assign a user license based on the number of users during peak periods. Others prefer an "overtime" fee.
- **Open systems portability:** As open systems evolves and programs become portable across vendors' platforms, should a user pay for each system on which he runs a program?
- **Taxes:** Some European governments want to tax software purchased out of the country but used in the country. — *Mark Halper*

Split decision

Diversity, like charity, starts at home, and so does the effort to deal with it.

Such is the case at HP, which had to deal with a monumental internal issue before addressing the outside world in its efforts to derive a user-based software pricing formula.

Specifically, the company sells its HP 3000 line of minicomputers, with its relatively proprietary MPE/IX operating system, amid a different set of market dynamics than that of its Unix line, the HP 9000, running the HP/UX operating system.

The differences have translated into a more profound user orientation in HP's 3000 software pricing than for its 9000 software pricing [CW, Dec. 7].

HP is moving 3000 software to a pure user-based formula, while it is shifting gears only halfway on the 9000 side — users will pay based on the expandability of their systems.

"They're moving to a fairly different pricing model for the two lines," pointed out Sean Bandarkar, director of marketing at the HP products division of Oracle Corp.

One reason for the varied approach is that HP has not yet built its license management software, NetLS, into MPE/IX, while NetLS is a part of HP/UX. NetLS measures number of users and CPU power.

HP's timetable for implementing its changes is modest. It has already shifted MPE/IX and selected MPE/IX system software, but it will not offer it for MPE application software until at least the middle of next year, when it plans to have added NetLS to MPE/IX. It will configure NetLS so that HP 3000 users can choose whether to measure by users or CPU power. — *Mark Halper*

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Companies wade through Wall Street

In storm's aftermath, Manhattan firms move operations to avert disaster

By Thomas Hoffman
NEW YORK

Disaster aversion was the catchphrase last week for several Wall Street firms that were forced to transfer staff and computer operations from flooded buildings in downtown Manhattan, following one of the most severe storms to hit the Northeast in recent memory.

But according to disaster-recovery experts, the economic impact from data processing disruptions was minimal compared with other recent disasters. Many companies switched to private generators, which helped minimize disruptions.

Companies such as Chemical Banking Corp. and County NatWest Securities were forced to transfer hundreds of staff members and several key computer operations from their respective offices at 55 Water St. and 100 Wall St.

Evacuation was necessary for many waterfront businesses as the rising tides of New York Harbor swept into basement vaults, knocking out electrical transformers and telecommunications equipment.

Six New York-based companies declared nine separate disasters with Comdisco, Inc., according to Michael J. Tobin, Comdisco's vice president of marketing.

Nine disaster alerts were also reported to Comdisco, but Tobin said none were upgraded to full-blown disaster declarations. The companies that declared disasters, Tobin said, transferred staff and operations to three Comdisco recovery centers in lower Manhattan and Carlstadt and North Bergen, N.J.

The financial impact of the storm was not expected to rival past disasters, such as the August 1990 Wall Street blackout, said Jeff Marinstein, president of Contingency Planning Research, Inc. (CPRI), a Jericho, N.Y.-based disaster-recovery management consulting firm.

At that time, 25 companies declared disasters with Comdisco. CPRI estimated that New York businesses suffered in excess of $1 billion in losses resulting from the 1990 disaster.

Securing the securities

Among the companies struck in the recent storm was County NatWest, a securities trading subsidiary of National Westminster Bank, which declared disaster on Dec. 12. It transferred 75 traders from its equity and treasury trading operations from 100 Wall St. to a disaster-recovery facility operated by Exchange Resources, Inc. (ERI).

The transfer was exceptionally smooth, considering County NatWest had not yet finalized a disaster-recovery contract with ERI when the storm arrived.

"What made it difficult was going from a cold start to creating a trading-room environment within 24 hours," noted Ken Israel, ERI's president.

ERI provided County NatWest's traders with IBM 3270 links to the company's mainframe operations and connections to market data services from Quotron Systems, Inc., Reuters Information Services, Inc. and Telerate, Inc.

Also, ERI replicated County NatWest's Microsoft Corp. MS-DOS applications running on Novell, Inc. local-area networks over Ethernet. Traders moved to the Staten Island facility began conducting trades by 6:45 a.m. Monday.

The primary data center for the Commodities Exchange, Inc. at 90 West St. was flooded on Dec. 11, which forced the exchange to transfer operations to its backup data facility at 15 Maiden Lane. Because the firm's data centers mirror each other's operations, the exchange experienced no problems, a spokesman said.

Just in time...

The winter storm that ravaged the Northeast last week couldn't have come at a more inopportune time for Chemical Banking. When the storm reached its peak the afternoon of Dec. 12, the bank had just completed the first phase of a planned conversion of its wholesale demand deposit account system. Rather than withdraw from the project, Chemical decided it would be more prudent to continue the conversion over the weekend — which it successfully completed.

Riding out the storm

Here's how a number of Wall Street firms kept their computers humming, despite storm-induced flooding in lower Manhattan:

- **The Depository Trust Co. (DTC)**, located at 55 Water St., ran its computer systems on emergency generators. However, DTC was not forced to evacuate the building or transfer its operations to an alternate hot site because the generators continued to power the firm's data center on the 21st floor, said Chris Lord, DTC's systems software director.
- **At Drexel Burnham Lambert, Inc.**, an uninterruptible power supply prevented power surges from disrupting transactions conducted over its PC LAN systems, said Howard Ertel, Drexel's senior vice president of systems. Ertel said Drexel houses its mainframes at an alternate data center site.
- **Fahnestock & Co.**, a government bond agency, was also helped out by backup systems. According to Charles E. Padgett, senior vice president and general counsel at Fahnestock, the landlord at its 110 Wall St. building shut down building power as a precautionary measure at 10:30 a.m. on Friday. After emergency generators kicked in, the company moved its traders to other offices, including its primary data center on 54th St. Telecommunications was also rerouted to other offices.
- **Salomon Brothers, Inc.** moved roughly 500 people from 2 New York Plaza to offices in the World Trade Center, according to Fred Pinto, a Salomon vice president.

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Tech Talk

Multimedia medicine

Multimedia systems can help head-trauma patients regain some of their faculties, according to a paper being written by David Cox, director of the neuropsychology department at the Florida Hospital Medical Center in Orlando. Some rehabilitation therapists who have experimented with tailored multimedia systems for patients speculate that the rich interactive environment — incorporating sound, images and video — may help the brain develop new pathways, rerouting information around damaged neurons. Government statistics indicate that 90,000 of the people who suffer head injuries each year have some lifelong loss of brain function.

Digital camera

Victor Hasselblad AB, an honored name among photography buffs for decades, is stepping into the digital age. The Sweden-based camera maker announced earlier this month that it would attach a digital system to the back of one of its motorized cameras. The Hasselblad DB 4000, which will use technology from Leaf Systems, Inc. in Southboro, Mass., will be capable of producing images with more than 16,000 shades per color — actually offering greater dynamic range than film. But casual snapshot-takers beware: List price for the digital camera will be $35,000.

European tech

The European Commission's core research effort into advanced computing, known as the third European Strategic Programme for Research into Information Technology, or ESPRIT III, recently added funding for five new projects to be carried out during the next three years. They include the following:

- IDEA (intelligent Database Environment for Advanced Application).
- EDS 2 (European Declarative Systems, Evaluation for Exploitation), a computer language project.
- Epoch, a parallel computing project.

MPP: Not there yet

Traditional supercomputers still best the new kid on the block

By Ellis Booker

THEORETICAL performance aside, massively parallel processing (MPP) systems are still outpaced by traditional vector supercomputers, according to a recent study by the Los Alamos National Laboratory.

While vector machines put billions of calculations in a line (or vector) and process them sequentially, MPP systems divide a computing problem among hundreds or thousands of simple processors running in parallel.

In tests, Los Alamos researchers found that a Cray YMP/8 from Cray Research, Inc. outperformed a Thinking Machine Corp. Connection Machine-2 (CM-2). The CM-2 uses 2,048 parallel processors. The three test codes were optimized for each platform before being run.

Balance sought

The team concluded that the current generation of MPP systems has not yet achieved the correct balance between processor speed and communications (processor-to-memory and processor-to-processor) speed.

Nevertheless, the three-year study, presented at Supercomputing '92 in Minneapolis last month, emphasized that MPP architectures will be vital to the future of high-performance computing.

Gary Smaby, president of high-performance market research firm Smaby Group, Inc. in Minneapolis, concurred: "MPP is here to stay and will be, in some variation, part of high-performance computing going forward."

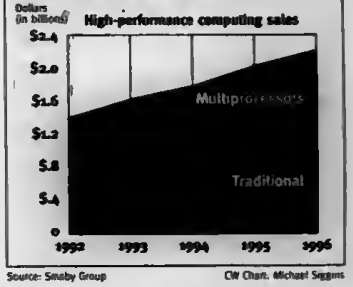
At the same time, Smaby said, users of high-performance systems are, for now, in something of a "never-never land," with the promise of MPP delayed by the fact that this architecture is not as mature as vector systems.

MPP lacks "all the the robust infrastructure a company like Cray has spent 20 years perfecting," he said.

Makers of conventional vector supercomputers have seen the MPP writing on the wall. Also at Supercomputing '92, vector processing pioneer Cray announced that its first MPP system, the T3D, would be available in 1993.

Slow going

Multiprocessing supercomputers are not threatening to replace vector processing soon



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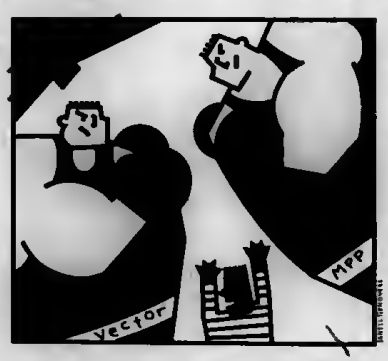

Silicon frontier is glowing

By Lori Valigra

Luminescent silicon may change the computer industry the way Elvis Presley revolutionized music.

Not coincidentally, the face of the "king of rock 'n' roll" has already been etched onto the new type of silicon and induced to glow intensely.

"And we did it without a velvet background," said Michael J. Sailor, assistant professor of chemistry at the University of California at San Diego.

Backers of the new technology said they expect it to be used in tomorrow's superfast optoelectronic computers, optoelectronic storage units and flat-panel displays.

Previously thought to be devoid of optical properties, silicon was found to be luminescent about two years ago. Several researchers discovered that highly porous silicon glows brightly when stimulated by electricity or light. (Porous silicon looks like a forest of widely separated "silicon" trees, so it conducts electricity well.)

The discovery took the microchip industry by surprise, spawning new research by physicists and chemists such as Sailor. Until then, scientists who had wanted to marry optics and electronics had been exploring new materials such as gallium arsenide phosphide.

Future optical silicon would radically change the internal workings of microprocessors, replacing electrons flowing down a wire with light signals traveling down a fiber-optic cable. The design could boost the speed of a computer at least 10 times and would permit denser packaging on chips, Sailor said.

"You can multiplex optical signals without interference, so you can put a lot more signals down a fiber-optic cable," Sailor explained at the recent "New Horizons in Science" briefing in San Diego held by the Council for the Advancement of Science Writing.

"Getting porous silicon to [work] with light is not a near-term project," Sailor said. The first step, he said, is finding out just why silicon glows. As in most areas of science, the reason is now under debate.

Valigra is an IDG News Service correspondent.

OUR COMPUTERS TO OUTLAST MOST CO

Pick up a paper and you'll no doubt read about another PC company on the brink of collapse. Does it matter? Not much. Unless you're stuck with a computer that's out of commission from a company that's out of business.

In the 80's, it seemed every time you turned around a new computer company opened up. For a while it looked like all you needed was a soldering iron, a toll-free phone number and a P.O. Box to get started.

Those days are over. The market has matured. Customers are demanding more. And clone companies are faced with an ugly reality: the less you know about making computers, the less likely you're going to be successful at it.

Writers in the press and financial analysts on Wall Street are even compiling lists as to which are about to go under. While all of these involve an amount of speculation on the part of their authors, you may be surprised to learn that many of the larger clone companies appear on the majority of them.

It is not a question of whether it will happen. It is only a question of when.

All of which means that choosing the right computer company has

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become every bit as important as choosing the right computer. It is no longer enough to compare price, product specs, service and support and then come to your decision.

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With their current credit and cash flow problems, buying computers from financially vulnerable clone companies has become something of a gamble.

Though this one's on display in our Houston offices, some of the first COMPAQ PCs are still being used. Obviously, our PCs are designed to be around a long time. So is the company.

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How bad is it?

The irony of it all. Last Monday in Little Rock, a dean of liberal economic thought, Robert Solow, told Bill Clinton and the economic summit members that the nation's most serious problem is its failure to invest in new plants and equipment.

Simultaneously, about 1,000 miles away, IBM's board of directors was prepping a series of stunning announcements, one of which would padlock some of the plants in which the company had sunk nearly $25 billion in the 1980s during a blistering capital investment program.

At a time in the '80s when so many companies were salting away profits into antitakeover war chests, IBM was doing exactly what the economists said it should do. It was building the most modern manufacturing and research and development facilities in the world. It was investing billions in pure research. It was preparing the desktop operating environment of the 1990s with partner Microsoft.

What the heck happened? More importantly, where is the current situation heading at IBM? The company is, after all, the single most important factor in the installed base of a majority of U.S. and worldwide corporations.

There are so many analogies that fit IBM's predicament. The best I can think of is that of the U.S. military in 1941, which built the heart of its Pacific defense around huge, powerful battleships. Then came air power. Then came Dec. 7, 1941. With lightening speed, the new and nimble vanquished the old and slow.

Like the U.S. Navy in late 1941, IBM is trying desperately to regroup. Reports are surfacing of some of the greatest deals on large systems in IBM's history. They're selling low-cost PCs. Its workstations are under tremendous price pressure. So for users, it's a case of the shark ethic: Eat the wounded.

But most importantly, what happened last week was the first real breaching in IBM's veil of invulnerability. The unthinkable has happened. IBM is failing.

Not font-tolerant

We crowed quite a bit recently about our new publishing system and new publication design. Lately we've been eating some crow — the result of some serious typographical problems that have turned parts of our text into what looks like alphabet soup. The problem is not in the stars, but at our printer, where some shoddy proofing failed to catch the results of a type default. Rest assured our printer has been duly apprised of the situation and has all but guaranteed us no repeat of these embarrassing and troublesome errors. In early January, we will also have improved the readability of our typeface, which we have recustomized for easier reading.

Bill Laberis

Bill Laberis, *Editor in chief*

Be innovative

Regarding Joshua Hammond's "Hard and fast truths about quality" [CW, Oct. 26]: I agree that the question "Is quality improvement right for every company?" needed to be asked. "Traditional" quality improvement tools should not be embraced on a wholesale basis but must be adapted to the performance evolution of a company.

My research shows that many successful companies, however, have achieved "high performer" status without ascribing to the generic quality-improvement management practices reviewed in the article. These companies have pursued breakthrough innovation as the focus of their quality efforts — to create product technologies with enduring market power, to identify new market opportunities and to create market technologies that truly "delight" customers. They recognize that innovation, not execution, is most likely to result in long-term value.

Innovation requires unrelenting attention to developing quality decision-making capabilities. These are the capabilities that focus the business on doing the "right things," as opposed to merely "doing things right."

Steven D. Bassill
Chicago

Unfair criticism

Computerworld greatly surprised me when it published Nicholas Andrelli's anti-intellectual and bigoted letter [CW, Nov. 9]. The only remarkable thing about his letter is the peculiar combination of an uninformed attack on a programming language and a xenophobic broadside against recent immigrants.

I have had the privilege to work with and supervise programmers and analysts who were not born in this country. I found that their educational background, work ethic and desire to succeed were equal or superior to those of the average "American" programmer.

The only instances where I encountered difficulties in communication were those in which the original statement of the problem to be solved lacked focus and cohesion.

Frank Phillips
Ellicott City, Md.

DEC responds to Product Spotlight

Regarding your Product Spotlight and lab report on minicomputers [CW, Nov.30]: The DEC system listed is not the best performance system we offer. The article should have listed the VAX 6000 Model 640 as the best throughput system. The VAX 6000 Model 640, using VAX ACMS V3.2/VAX Rdb/OpenVMS V4.1, runs at 208.80 TPS-A, according to the Oct. 23, 1992 Transaction Processing Council report.

The article also makes several statements that DEC Alpha AXP systems are not currently shipping in volume. This is simply not true — Alpha AXP systems are now shipping in volume to customers. Additionally, the article notes that DEC's efforts to capture mainframe downsizing business are "on hold while users wait for Alpha AXP systems."

There are active sales and marketing programs aimed at the downsizing market in DEC today that focus on both VAX platforms as well as Alpha AXP platforms.

Judith Abrahamovitch
OpenVMS/AVS public relations consultant
Boxboro, Mass.

Staff reduced? Cut back on work load

In "Trying times indeed for IS staffs" [CW, Nov. 16], you note Southwestern Bell Public Service Co. reduced staff from 30 to 16 people with no change in work load.

How can I go into one of my groups and say we are reducing your staff by half, but there is no change in the project or delivery dates? If the personnel in that group are working 40 to 50 hours per week, and because software development hours do not scale linearly, what does one expect of the developers?

In reality, it is necessary to scale back projects and expectations along with personnel. I do not have the luxury of hand-waving and saying everything appears to be simple, and why can't I have all my candy tomorrow. And here, we certainly do not allow the people above us that luxury either.

Richard L. Coleman
Englewood Cliffs, N.J.

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The 'Ize' have it

Michael Cohn

Recent employment forecasts are grim. Shops are downsizing. Firms are running lights-out operations. Budgets are shrinking. Jobs are drying up. Even seasoned systems programmers are wondering who'll be next.

We could give up. We could blame the economy. We could agonize and criticize, rationalize and then go write our resumes.

Or we can do something about this. We can save ourselves. We can organize and energize and create all the IS jobs we'll ever need. Even with a minimized IS industry, we can maximize IS employment. All we have to do is be creative and try a couple of things. Consider the following:

• **SPECIALIZE:** If it worked for doctors, it will work for us. They have arm specialists and hand specialists, finger specialists and cuticle specialists — and they all drive German sedans.

So how about IS specialists? "Sure, we'll fix your abend; talk to our Cobol specialist, who'll refer you to our Procedure Division specialist, who'll let you see the guy who only handles nested-ifs." This would keep all kinds of IS folks on the payroll. Just knowing OCCURS DEPENDING ON could bring in six figures a year.

• **UNIONIZE:** Other industries have unions. Let's join together and keep our jobs.

Of course, it might not be that easy. When you get a bunch of us together, we don't agree on anything. We won't buy the same hardware. We won't work the same hours. We won't wear the same clothes, except for maybe the white socks.

• **TERRORIZE:** Destroy a disk pack. Create a crisis. There's nothing like some healthy panic

JANELL GENOVESE

to keep our numbers growing. An operator once told me, "If you're fighting fires, hire more firemen." Of course, he used to be a CIO.

• **DECENTRALIZE:** We once had megacorporations, information empires and a happily employed IS bureaucracy. Now, divisions want autonomy. Departments want computers. Users want LANs, servers and software.

So let them have departmental systems. They'll take years to integrate. In the meantime, departmental systems will grow into disparate systems, which will grow into duplicate systems, which will mean more jobs for everybody.

In the old days, a computer did the work of 10 people. Now, 10 people want 10 computers. I don't know if that's progress, but it keeps us off unemployment.

• **UPSIZE:** Remember water-chilled CPUs? Used ones are a dime a dozen. Dumb terminals? They're practically giving them away.

Don't let your CFO buy into this client/server stuff. Don't let your CEO fall for the tiny, open systems. They need 90 MIPS mainframes and lots of 'em. They're cheap. They'll create jobs. They'll use up unwanted floor space.

RISC is here today, gone tomorrow, but big boxes will be around forever — because no one will take them off your hands.

• **FRATERNIZE:** This is dramatic, but it's time to get to know the users. Hang around their offices. Reboot their PCs. Buy them a drink or two.

As unfair as it may seem, users occasionally survive, while IS employees get the ax. And some accountant, planner or other misguided user is probably doing the chopping.

So make friends with users. Convince them that IS will save the company. Get them to believe it, or get them fired. Either way, the odds are better for us.

Cohn works for a very large computer company in Atlanta.

Is client/server a lot of hot air?

FIRE WATCH *by* John Gantz

Now that IBM has formed a whole division in support of client/server, I have to wonder if maybe this whole concept of client/server — the new computing paradigm to which we are migrating — is a hoax.

Mind you, I've been crisscrossing the country for the last several years pumping up the concept, along with related topics such as open systems and downsizing. In fact, at Comdex/Fall '92, I served on a panel addressing the subject. The room was full of well-informed people. We all talked as if client/server were real and as if it were going to save us money.

But I wonder.

In the 1970s, we had many of the same hopes for the concept of distributed data processing. It would put computer power close to the source of the transaction, we said. It would liberate the end user. It would relieve mainframe cycles. It would do this, it would do that, blah blah blah.

But distributed data processing fell of its own weight, brought down by the hidden costs of implementing it. The processing nodes (we call them servers now) weren't always reliable and required skilled administrators. The processing terminals (we call them desktop computers now) always seemed to need more memory and bigger printers. The users always seemed to need more training and support than expected, and developing distributed applications always seemed to be more difficult than envisioned (and it still is).

Here are two examples of the smoke and mirrors that may be making client/server seem more real than it is:

1. Motorola has always made a big noise about its migration from mainframes to multiuser Unix machines and, by most measures, is a guiding light in downsizing. But when I queried the executive in charge of the downsizing efforts at the division that makes cellular phones, I discovered that whole the division had cut mainframe data processing costs to zero, the computers hadn't gone away. They were still being used by headquarters; and presumably other departments now picked up the cellular division's chargeback.

I have a feeling that a lot of the cost savings of client/server are like that — more shifts than real savings.

2. At my Comdex panel on distributing data, it was pretty much agreed that the only sane way to distribute databases was through a replication process. Two-phase commit, any-to-any multidatabase transactions are no more with us today than they were in the 1970s. If distributed data processing had a technological Achilles' heel, it was distributing the data. A lot of what is called client/server today is really time-sharing.

Client/server works on a small scale. But rolling it across an entire enterprise is different. The challenges include localization of enterprise applications, network software licensing, network management, software interoperability, planning, training and administration.

For that matter, I can't recall too many major client/server applications that didn't require the services of a consultant to implement. Andersen Consulting, in discussing its widely publicized Northwest Airline ticket auditing application, admits that very few IS shops or consulting firms could have pulled it off.

I like client/server. It's helping me make a living. But then, I liked distributed data processing, too. It was fun to study. Unfortunately, it just wasn't fun to implement.

Gantz is senior vice president of International Data Corp., where he is responsible for all research and consulting in desktop automation and workgroup and office computing

Charles Babcock

In defense of 64-bit

You may think 64-bit computing is the last thing you need, but most IS professionals will soon find they must start considering the pros and cons. Buried in 64-bit characteristics are advantages in database mapping, rapid data movement and lower programming costs that will prove difficult to ignore in the long run.

The issue won't be a pressing need for increased address word size and address space. The demand for address space had to grow by a factor of 256 before a 16-bit application was forced to move up to a 32-bit system.

That factor was not so large that applications couldn't overtake it within a few years of the appearance of 16-bit systems. But the demand for address space has to grow 64,000-fold over early 32-bit system uses before it runs up against the 4G-byte limit.

And if you have outgrown 32-bit and already moved to Mips Technologies' R4000 or DEC's Alpha, your need for address space will have to grow by a factor of 4 billion before you exhaust its potential.

When asked for examples of applications that have run out of 32-bit address space, the first ones that Mips and DEC spokesmen came up with were the applications they use to simulate their next-generation computers. So it is fair to say that one of the first beneficiaries of 64-bit computer systems will be the computer makers.

Although doubling the address word does not automatically double performance, being able to read instructions and data in 64-bit gulps can and will improve performance. And in applications where large data types are moved around frequently, the 64-bit address word does actually double performance for these movements, according to Kevin Fielding, DEC's product marketing manager for the Alpha line. These include biological and meteorological simulations, high-resolution color imaging and graphics and financial applications relying on large numbers.

On the other hand, 64-bit systems can make more effective use of both internal memory and disk. Because of the almost infinite number of address spaces, an entire database can be mapped to a 64-bit system rather than segmented through a set of indexes and pointers. This in turn makes programming large database applications simpler and cheaper.

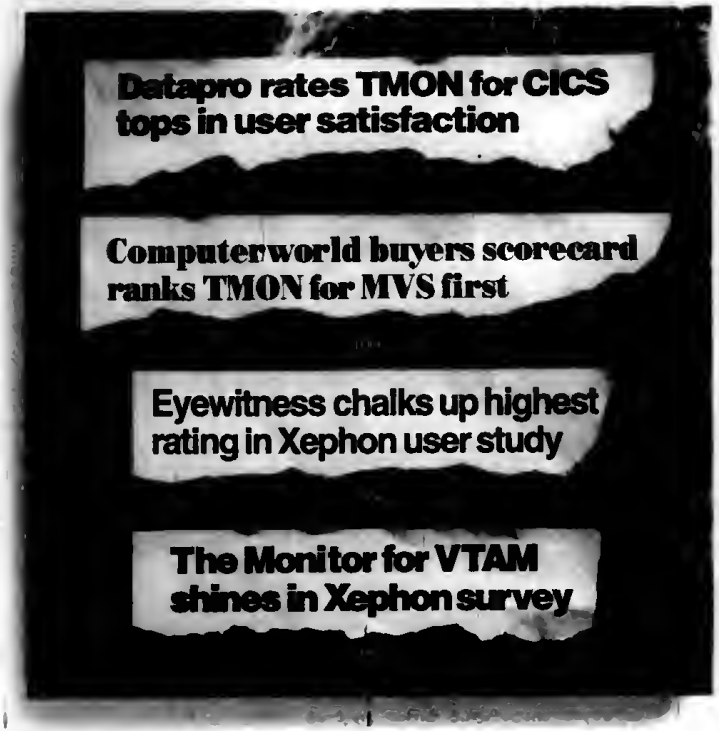
And true enterprisewide, client/server systems may run up against the limits of 32-bit systems sooner than expected. It will not do us much good to map the corporate database to a 64-bit server on the network and then not be able to freely make use of the data from 32-bit servers or user desktops.

In short, 64-bit has a viable claim as the system of the future, but the future is not today. Whether it arrives tomorrow or five years from now will depend on the needs of the organization.

Far from introducing a great deal more complexity, 64-bit will be the initiator of a new level of simplicity as far as database and networking programmers are concerned. Also, 64-bit will take fuller advantage of cheaper memory, allowing a new style of application design.

Neither of these characteristics will appear immediately. Remember, the early 64-bit systems are going to be running 32-bit operating systems and applications.

Babcock is *Computerworld*'s technical editor.



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Jesse Berst

Windows apps get smarter

A new trend in Windows software has become important enough to merit the attention of IS professionals: Windows developers are beginning to build smarter software.

A new drawing application called Visio typifies this new approach. Normally, I wouldn't discuss a low-end drawing package in this column because drawing programs are typically aimed at the graphic arts department, not at the ordinary business users served by IS.

Visio is different. Created by Seattle-based ShapeWare, Visio is a drawing tool for the non-artist. It can make that claim because it is one of the first examples of new-generation smart software.

Smart software understands certain rules and makes choices for the user based on conditions. Because some of the expertise is built into the software, the user doesn't have to bring as many skills to the table.

In the case of Visio, the expertise is embedded in smart tools and templates. To draw a straight line, for instance, you move the mouse straight. To draw a curve, you swing the mouse in an arc. Using gesture recognition, Visio knows what you want without your telling it in advance.

Template power

The real power of Visio lies in its templates. They contain predesigned shapes with behavior coded in. For instance, if you choose the template for an organization chart, you get predesigned boxes and lines. Those boxes already know where and how to place text. If you draw lines between the boxes, the smart connectors know enough to stay connected if you move the boxes around later.

Likewise, the space-planning template has smart shapes for walls, doors, windows and furniture. These shapes know how big they're supposed to be (to stay in scale) and how they're supposed to align with one another.

And now we come to the important part — the part that makes smart software so intriguing. Because of Visio's built-in intelligence, you don't have to know anything about drawing to use it.

Ordinary drawing programs have a wide range of powerful tools, but you have to understand drawing before you can put them to good use. Some of that drawing expertise is built into Visio. That makes it accessible to people who have ideas to express but normally would never consider sketching them out.

At first glance, you might think that an ordinary user wouldn't have much need for a drawing

Windows apps, *page 30*

Display standards elusive

By Michael Fitzgerald

Scientists have figured out plenty of new ways to manipulate the light that breaks through your laptop screen, and the result is ever-improving displays. Active-matrix screens offer the best display, but these screens are still costly and difficult to produce.

Most manufacturers have opted to use only color, active-matrix screens, but a couple of recent endorsements have raised interest in active-matrix monochrome screens as well. Apple Computer, Inc. uses the technology in its PowerBook line, and recently, Compaq Computer Corp. announced a notebook with an active-matrix monochrome screen.

Other vendors said they are studying whether they want to enter this market. The trade-offs come from high power consumption and cost; the difference in cost between active-matrix monochrome and color is negligible right now.

Passive vs. active

Key differences between passive-matrix and active-matrix screens

Rows and columns of electrodes are charged by transistors located on the periphery of the panel.	Each pixel has its own drive transistor attached to the glass.
No way to turn on one pixel without affecting others.	Each pixel is turned on individually, eliminating crosstalk and providing seven times better contrast.
Price advantage: $1,000-$1,200 lower than comparable color portable using active matrix.	Response time is one-tenth that of STN.

Slow to follow suit

Despite Apple's PowerBook success and Compaq's claims that initial demand for its product far exceeds expectations, other vendors, such as IBM and AST Research, Inc., are shying away from active-matrix monochrome.

"There would be real benefit if you could get the resolution to XGA level, but that probably won't happen until maybe 1994. Until then, you can get color for almost the same price," said Jim Bartlett, worldwide product line executive for mobile computing at the IBM PC Co.

"It has benefits as a technology, but we think the market will go to passive-matrix color at the same price [as active-matrix monochrome]," said Marcy Puhnaty, notebook marketing manager at AST.

Randal Ginsto, senior analyst at WorkGroup Technologies, Inc. in Hampton, N.H., said he thinks vendors will shift to active-matrix monochrome only if it does not cost more than passive matrix, which it now does.

Most portable computers today have passive-matrix screens, which use fewer transistors spread out over a wider area of the display than active matrix. Each pixel on either type of screen gets a jolt of electric current from the transistor.

In a passive-matrix screen, the jolts come further apart, so screen refresh takes longer. In an active-matrix screen, where each pixel has a dedicated transistor, the flow of light and electric current is steady, resulting in an inherently crisper and sharper display.

The difference to users is simple: Active-matrix technology offers faster response and better screen display. Active-matrix screens make it easier to see the screen from side angles and also improve what users see on the screen. But they also are more expensive than passive matrix, by as much as $1,500 per screen.

"If you take a standard monochrome or passive-matrix col-

Display standards, *page 30*

Find ways around town with software

By Michael Fitzgerald
HAVERFORD, PA.

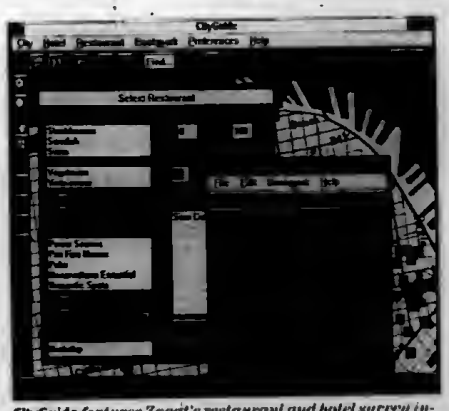
■ A new personal mapping software package promises to help people find their way around unfamiliar cities.

Axxis Software, Inc., a start-up chaired by J. Paul Grayson at Micrografx, Inc., recently began shipping the first modules of the Zagat-Axxis CityGuide, which was designed to give business travelers directions and dining and entertainment information for a variety of cities.

The CityGuide features the full text and ratings of Zagat's annual restaurant and hotel surveys. The software can be used to create personal maps of how to get around a city; it features a full display of the city's streets, with restaurants, hotels, landmarks and attractions all marked on the map. The maps are based on data from Etak, Inc.

Currently, New York, Chicago and Los Angeles CityGuides are available, with some 30 more U.S. cities planned. International versions will be done as well. Each guide costs $99; all three can be purchased together for $249.

CityGuide requires Microsoft Corp.'s Windows 3.0 environment or better, at least 2M bytes of random-access memory (4M bytes are recommended) and between 5M bytes and 9M bytes of hard disk space for each city. Axxis plans to produce a version for the Apple Computer, Inc. Macintosh in 1993, as well as scaled-down versions for handheld machines. A version is also available on CD-ROM.



CityGuide *features Zagat's restaurant and hotel survey information for travelers in unfamiliar surroundings*

As they say, it's all in the genes. Introducing the ThinkPad™ from IBM. The slickest, sleekest little number that ever crunched one. A mere seven-and-a-half pounds of brains and beauty that just begs you to take it anywhere. And once you own one, that's exactly what you'll do.

The top-of-the-line ThinkPad 700C sports a

All this in only 11.7"

Introducing

ThinkPad

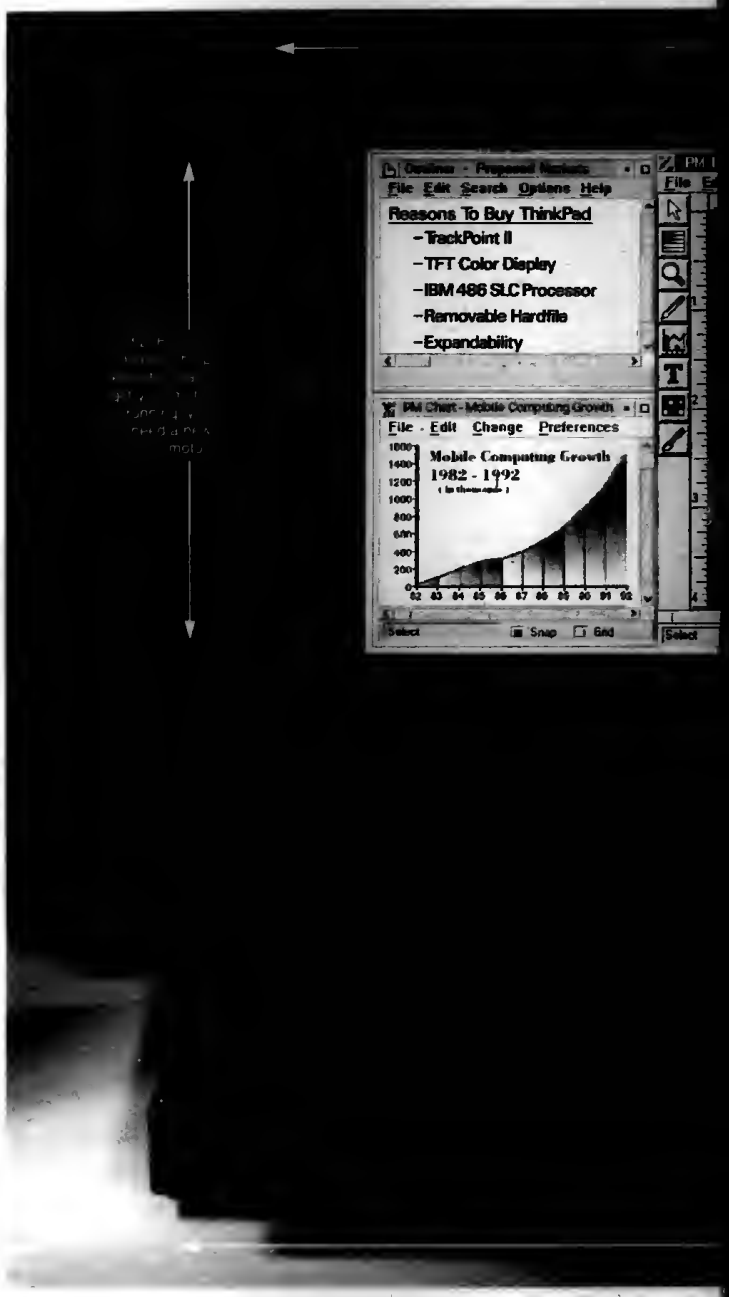
screaming 486 SLC™ 25 MHz upgradable processor. But it's built for comfort too. There's a surprisingly roomy interior, with a full-size, ergonomically designed keyboard. And a screen that literally bends over backwards (180 degrees, to be precise).

Strategically placed on the keyboard is a little red spot called the TrackPoint II.™ It does what a mouse would do with a few million more years of evolution. Nothing dangles; it's part of the soul of the machine. You can operate it with one fingertip. And it allows you to think on any terrain, even one without any flat surfaces.

The ThinkPad's screen is a thing of almost aching beauty. Its 640 × 480 VGA resolution is sharper than that of many desktop computers. It displays 256 colors. And it's the biggest screen on any notebook. All of which makes ThinkPad very easy on the eyes.

The ThinkPad comes standard with things some other notebooks don't even offer as options. Like 4MB of memory you can upgrade to 16MB. 120MB of hard disk space. Pre-installed DOS 5.0 and

*Depending on usage and configuration. **MSRP. Dealer prices may vary. †Warranty information available from the Personal Systems HelpCenter or an IBM authorized dealer. 700T warranty is available in USA and Canada only. ††In Canada call 1 800 465 7999. IBM is a registered trademark and ThinkPad, HelpWare, HelpCenter, SLC and TrackPoint II are trademarks of International Business Machines Corporation. PRODIGY is a registered trademark of Prodigy Services Company. © 1992 IBM Corp.



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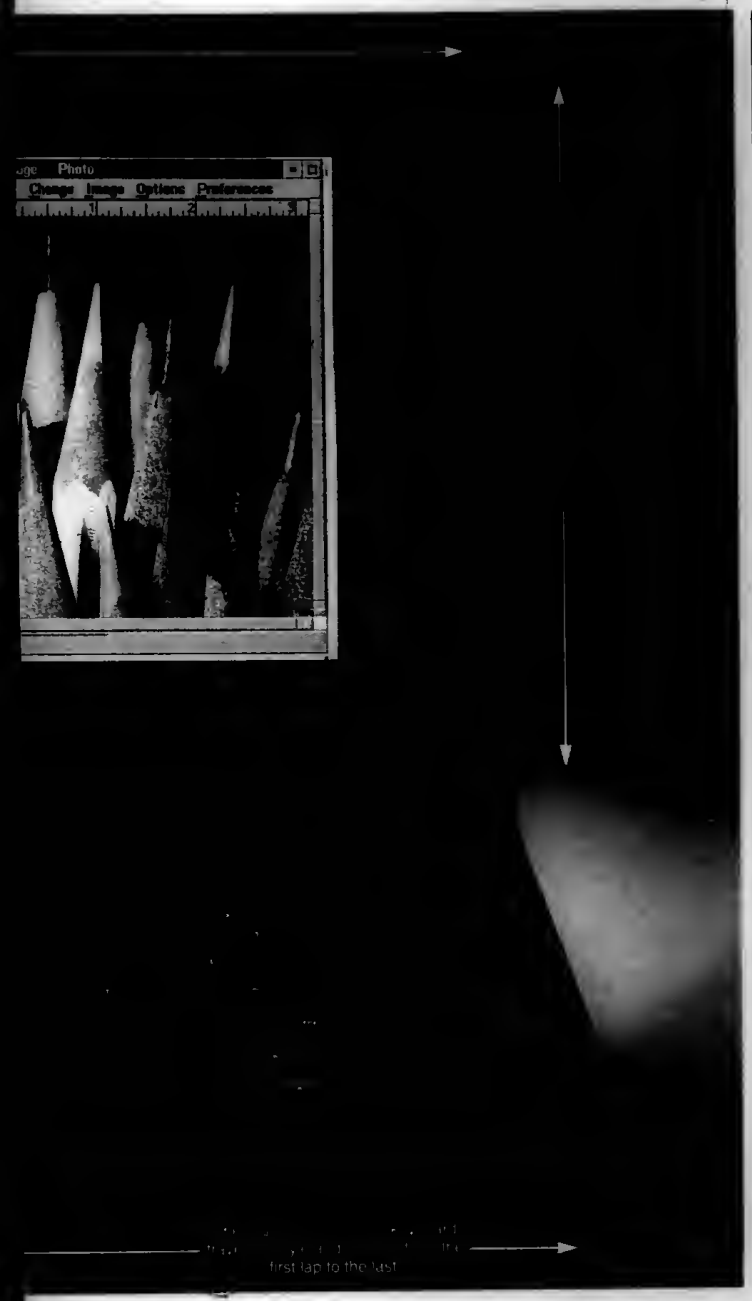


PRODIGY.* You can soup it up with a turbo-charged 486SLC2 50/25 MHz processor—just one of the upgrade products IBM offers. And the hard disk is removable, which makes it easy to upgrade and share your ThinkPad, not to mention the great security and virtually unlimited storage.

ThinkPad blows the doors off its competition in an even more surprising arena. Price. Any ThinkPad in the line will give you more for your money—and for your psyche—than any other notebook you can buy.

ThinkPad	Model 700C	Model 700
Processor	486 SLC/25 MHz	486 SLC/25 MHz
Display	10.4" Active Matrix 256-Color Screen	9.5" Monochrome Display 64 Grayscale Screen
Battery Life*	2–4 Hours	3.8–7.5 Hours
Weight	7.6 Lbs. with Battery	6.5 Lbs. with Battery
Warranty	3 Years (International)	3 Years (International)
Price**	$4,350	$2,750

If you have questions along the way, your ThinkPad Models 700C and 700 are supported by HelpWare,™ an invaluable service package that includes a three-year international warranty.†

For more information or an IBM authorized dealer near you, call our Personal Systems HelpCenter™ 24 hours a day, 7 days a week at 1 800 772-2227.††

Then just park one in your lap and see what happens.

IBM

a mainframe.
s a Maserati.

Windows applications getting smarter

CONTINUED FROM PAGE 27

tool. In reality, most people encounter dozens of situations where a picture would be worth a thousand words:

- A quick space plan for the new office.
- A flow chart to document the order-entry process for new employees.
- A simple illustration of market segments for the sales force.
- A circuit diagram for an engineering idea.
- A map to show a customer how to get to the office.

I don't want to oversell Visio. There's room for improvement and for more intelligence. But it does serve as a great example of an important new trend. More mainstream Windows programs are adding smart features. IS should begin to consider the intelligence of a program when making purchase decisions. And IS should look for ways to build intelligence into custom solutions.

> Ordinary drawing programs have a wide range of powerful tools, but you have to understand drawing before you can put them to good use. Some of that drawing expertise is built into Visio. That makes it accessible to people who have ideas to express but normally would never consider sketching them out.

Here are five ways Windows programmers are making software smarter:

- **Smart tools:** These tools anticipate the most common behaviors and build them in. You can override these intelligent defaults, but 90% of the time they give you what you want.
- **Object orientation:** The elements of the program are self-contained objects that "know" their own behavior.
- **Wizards:** A Wizard steps a user through a difficult function. Basically, it asks the user questions and then performs actions based on the answers.
- **Agents:** Agents are macros that can respond to a trigger event — start at a certain time, for instance, or take action if the value of a field drops below a certain point and so on. Because they know what events to watch for, agents can act on their own (in a limited sense).
- **Expert applications:** These programs include a knowledge base users can apply to the task at hand.

Smart software is in its infancy. Even so, it's clearly the direction we are headed in. In evaluating the next generation of Windows software, one of the first things you should do is check its IQ.

Berst is the publisher of Redmond, Wash.-based "Windows Watcher" newsletter, a monthly briefing service for software executives and corporate technology managers.

PC prices down

'Tis the season to cut prices — at least for four major PC vendors. Here is a roundup of recent changes:

Toshiba America Information Systems, Inc., Irvine, Calif.

Satellite line:

T1800: down 17%, to $1,300

1850: down 14%, to $1,650

1850C: down 10%, to $1,850

Multimedia line:

T6400DX: down 6%, to $4,599

6400DXC: down 8%, to $6,899

New products:

T6400DX: 25/50-MHz DX2 processor, $4,899

6400DXC: 25/50-MHz DX2 processor, $7,499

Zenith Data Systems, Buffalo Grove, Ill.

ZDS 600NL series:

620NL Model 60: down 3.5%, to $1,399

625NL Model 85: down 11.1%, to $1,599

625NL Model 85B: down 10.5%, to $1,699

625NL Model 120: down 10%, to $1,799

Z-Sport series:

Z-Sport 325S Model 60: down 21.2%, to $1,499

Z-Sport 325S Model 85: down 20%, to $1,599

Z-Sport 420S Model 85: down 21.6%, to $1,999

Z-Sport 425S Model 120: down 17.9%, to $2,299

Z-Note series:

Z-Note 320LB Model 60: down 13.5%, to $1,599

Z-Note 320L Model 60: down 12.2%, to $1,799

Z-Note 325L Model 85: down 16.7%, to $1,999

Z-Note 325L Model 120: down 15.4%, to $2,199

Z-Note 325LC Model 120: down 12.5%, to $3,499

NEC Technologies, Inc., Boxboro, Mass.

UltraLite SL/20, 80M-byte hard drive: down 15%, to $1,699

UltraLite SL/20, 120M-byte hard drive: down 16.7%, to $1,999

UltraLite SL/20P, 80M-byte hard drive: down 10%, to $2,099

UltraLite SL/20P, 120M-byte hard drive: down 14.3%, to $2,799

UltraLite SL/25C, 80M-byte hard drive: down 18.9%, to $2,999

UltraLite SL/25C, 120M-byte hard drive: down 17.5%, to $3,299

NEC also cut prices 6.6% to 12.7% on its cellular phone-equipped UltraLites with built-in 14.4 bit/sec. data/fax modems. Prices now range from $3,499 to $5,499.

Advanced Logic Research, Inc., Irvine, Calif.

Advanced Logic Research dropped prices 21% to 56% on all its 486 upgrade modules. Depending on the machine and the upgrade, customers can upgrade for anywhere from $199 to $2,495.

Display standards elusive

CONTINUED FROM PAGE 27

or screen, the cursor will 'submarine' on you, while with active matrix you don't lose it that way," said Andrew M. Seybold, editor in chief of the "Outlook on Professional Computing," a Brookdale, Calif., newsletter.

All wet

Submarining describes what happens when, for example, a user moves the mouse and loses track of the cursor until he stops moving the mouse or when the cursor in a word processing program disappears while editing. Submarining occurs because passive-matrix technology needs more time for each refresh of the screen than an active-matrix screen. The "computer is actually waiting for the screen to catch up with it," Seybold said.

Passive-matrix screens are improving greatly with each generation. The color versions of these screens in particular have shown gains, with the most recent batch of screens being much brighter and no longer suffering from the "striping" effect that made their predecessors look like poorly white-washed houses.

The battle between active and passive matrix should continue for some time and may not produce a clear marketplace winner. However, a joint venture between Motorola, Inc. and in-Focus, Inc., a Beaverton, Ore.-based flat-screen maker, may threaten active matrix. The two companies said they will produce passive-matrix screens that couple the economic pluses and power savings of passive matrix with the speed and brightness of active matrix.

Software application packages

SoftLogic Solutions, Inc. has introduced WinSense, The Windows Optimizer, which the company said was designed to unravel the mysteries of Microsoft Corp.'s Windows, making it easier for users.

A user profile feature evaluates work style and hardware resources. For optimal system performance this feature determines and recommends appropriate settings to Windows options. A fail-safe options control system to access and edit every aspect of Windows functioning is included, as is an on-line international database that explains more than 300 Windows options and more than 100 computer and software terms. WinSense runs on PCs with Windows 3.1 or higher.

The introductory price is $49.95.

➤*SoftLogic Solutions*
1 Perimeter Road
Manchester, N.H. 03103
(603) 627-9900

Softool Corp. has introduced CCC/Manager for Microsoft Corp.'s Windows NT, a configuration management product that manages the software life cycle from development through maintenance.

Features and benefits include an interface that is fully compliant with IBM's Common User Access; for Component Management, the product allows users to retrieve, manipulate and store multiple versions of any kind of file; for Application Management, virtual windows can be created and updated.

CCC/Manager for Windows NT costs $695.

➤*Softool*
340 S. Kellogg Ave.
Goleta, Calif. 93117
(805) 683-5777

Macintosh products

Storage Dimensions is shipping the MacinStor SpeedArray, a redundant array of inexpensive disks Level 0 disk array.

The product, which was designed for Apple Computer, Inc. Macintosh Quadra, can be used for disk-intensive applications including imaging, multimedia, color prepress and digital video. The firm's Macintosh I/O Co-processing Architecture technology is used. MacinStor SpeedArray is available in eight preconfigured models, ranging in single-enclosure capacities from 1G byte to more than 8G bytes that integrate from two to four MacinStor 2Fast hard disk drives. Configurations can reach up to seven drives or 14G bytes via expansion modules.

Prices start at $6,299.

➤*Storage Dimensions*
1656 McCarthy Blvd.
Milpitas, Calif. 95035
(408) 954-0710

Utilities

Blackhawk Data Corp. has announced Version 1.2 of its ColrTrax Screen Print Utility.

Presentation-quality color images can be created by using ColrTrax with popular software packages, the firm said. Charts and graphs are generated by spreadsheets or presentation packages, color images with paint and illustration software. Using databases, ColrTrax provides printouts that mix images, photographs and text. ColrTrax runs on any DOS-based PC with IBM's Color Graphics Adapter, Enhanced Graphics Adapter, Video Graphics Array (VGA) and Super VGA video.

ColrTrax Unlimited costs $199. ColrTrax Single-User edition costs $99.

➤*Blackhawk Data*
Suite 411
7234 W. North Ave.
Elmwood Park, Ill 60635
(708) 453-9590

Product Evaluation

New Product In-Site

IBM PS/2 Server 295:

Users praise performance but hit tech support, interoperability snags

Computerworld's New Product In-Site is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

IBM PS/2 Server 295

■ IBM's Personal System/2 Server 295, an enhanced version of Parallan Computer, Inc.'s Server 290, is the company's offering to superserver customers. A wide array of fault-tolerant features and administration functions had evaluators claiming the Server 295 is a better system for downsizing than lesser priced, competing products.

■ Along with IBM's June acquisition of the marketing rights to the Parallan Server 290 came a number of transitional problems. While evaluators were happy with IBM's storage enhancements to the Server 295, they still desired more complete support for Novell, Inc.'s NetWare and alternate operating systems as well as better technical support.

For our evaluation of IBM's PS/2 Server 295, we surveyed four users. The result? Administrators and evaluators of the system found it pricier than other high-end servers, but it delivered on their expectations for fast, fault-tolerant, high-capacity processing. And though they were generally satisfied, they want and expect additional improvements during the next six months.

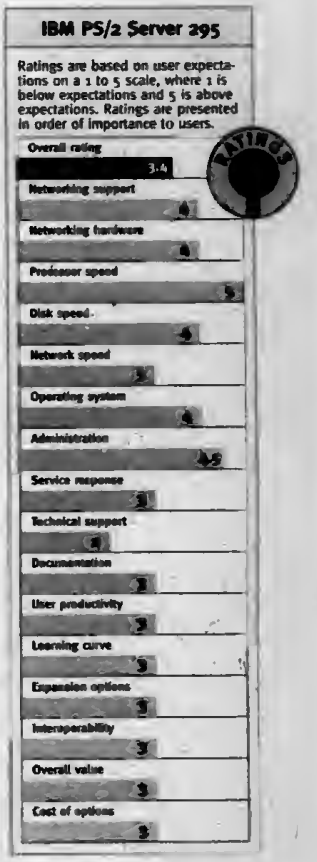
Like the Parallan 290, the Server 295 includes a modified version of OS/2 1.3 supporting up to 128M bytes of Error Correcting Code memory; a dual- or uniprocessor architecture with Intel Corp.'s i486 33- or 50-MHz processors; and dual, 32-bit Micro Channel Architecture (MCA) buses with a total of 12 MCA slots. In all, the system was designed to support a fault-tolerant computing environment.

Because the Server 295 was released recently, *Computerworld* asked two users of earlier 290 systems to participate in this survey to provide long-term evaluative balance.

Server 290 and 295 users were all supporting environments of 50 to 200 users and had Token Ring or Ethernet topologies or both. They also expected to support a variety of network nodes.

All evaluators were running some type of SQL database application, along with a variety of off-the-shelf OS/2 programs.

This evaluation was developed with the assistance of Howard Rubin Associates, Inc. and Technology Investment Strategies Corp.



Network support

Although evaluators agreed that the Server 295 provided better than average networking support, they were waiting for additional enhancements to be made to the system early next year.

System integrator: "We have a strong desire for [NetWare] to be supported in native mode, and that's really the biggest short-term problem for us."

Consulting firm: "I had no problem with throwing in an internal bridge and running Token Ring and Ethernet on the system. Once I brought it up, everything was fully functional."

Networking hardware

Users found that a variety of additional networking hardware was available for and functional with the Server 295 MCA bus. They rated the system at about average.

Government agency: "I had to run Ethernet, 4M bit Token Ring and 16M bit Token Ring simultaneously. It was able to do all three."

Processor speed

Evaluators raved about the performance of the system, noting that processor speed and overall architecture provided stunning performance with a range of applications and usage loads.

Government agency: "It gave us the ability to take our [statistical] data from an IBM 3090 and move it to the Server 295 without a serious detrimental loss in performance."

Financial services: "The asymmetric multiprocessing counts for something, but not as much as I thought."

Disk speed

Evaluators were impressed with the disk performance of Server 295's redundant arrays of inexpensive disks (RAID)-5 storage subsystem. As with all RAID systems, the trade-

Server 295, *page 32*

SITE PROFILES

Installation descriptions for users who evaluated IBM PS/2 Server 295

	Government agency	System integrator	Financial consulting	Financial services
Network type	Token Ring	Banyan, Novell, Unix, Appletalk	Novell	Microsoft LAN Manager
Number of nodes	70	140	120	55
Applications	SQL Server, WordPerfect, SAS, Notes	SQL Database, Notes	SQL Server	SQL Server
Overall cost	$215,000	No comment	$60,000	$120,000

Product Evaluation

Several 295 users say the system is expensive. IBM responds that it outclasses competing superservers.

CONTINUED FROM PAGE 31

off is between the overhead processing of RAID software — which reduces disk performance — and the protection it affords. For most downsizing operations, the trade-off will always favor fault tolerance.

New Product IN-SITE

Government agency: "The RAID-5 configuration carries a reasonably significant overhead."

System integrator: "Compared to numerous RAID subsystems we've tested here, this was the most impressive."

Network speed

Depending on network topology, evaluators rated the Server 295 as about average.

Government agency: "There's absolutely no bottleneck at all on the server side with everybody just heating on it like crazy."

Consulting firm: "We couldn't say it's any better than other servers we're using. We're running 4M bit Token Ring, but the bandwidth utilization is low."

Operating system

The Server 295 runs a modified version of OS/2 1.3, customized to support 128M bytes of random-access memory. Networking support comes through IBM's LAN Server and Microsoft Corp.'s LAN Manager.

Government agency: "I'd like to do more system updating in on-line, real-time mode rather than taking the server down and doing it in off-line mode."

System integrator: "On-line updating is a primary thing we'd like to see."

Consulting firm: "I'd prefer NetWare."

Administration

The Server 295's Maximum Availability and Support System/2 won raves from evaluators.

Consulting firm: "It was the only server system I've seen that supplied anything. I like it."

Service response

Evaluators agreed that service and support are taking the brunt of the transition in the deal between IBM and Parallan. The financial services evaluator bought an early Parallan model and had reliability problems.

Financial services: "We suspected we had a lemon for a long time. In the first six months we had several dozen crashes."

IBM PS/2 Server 295 features

- **Processors:** One or two Intel 486DXs.
- **Clock:** 33-MHz/128K-byte cache or 50-MHz/256K-byte cache.
- **Architecture:** Dual 32-bit Micro Channel Architecture (MCA) bus.
- **RAM:** Up to 128M bytes.
- **Hard disk:** 400M-byte or 1G-byte SCSI drives with up to 28G bytes of total system storage.
- **Channels:** Two or four SCSI disk channels with 32-bit RISC processors.
- **Expansion:** 12 MCA expansion slots.
- **Display:** VGA.
- **Operating system:** OS/2 1.3 and OS/2 LAN Server 1.3 and 2.0; Novell's NetWare Requester for OS/2; Microsoft's LAN Manager.

FACTS FACTS

Documentation

Users of the Parallan Server 290 received the full complement of technical and user documentation and were favorably impressed. IBM Server 295 customers were provided only with user documentation, while the system integrator received both sets of manuals. Documentation was rated as average.

Government agency: "If you've been around IBM long enough, you recognize that they have a propensity for what they call 'user documentation' and 'technical documentation.'"

Consulting firm: "There was a lot they made reference to [in the documentation] that I couldn't find in my OS/2 manuals, like operating system issues and a lot on fine-tuning the server."

Productivity

Evaluators found the Server 295 slightly easier to install, configure and administer than expected. They also said throughput had increased user productivity.

Government agency: "Our end users have significantly improved their productivity since we moved off of [other servers]."

Consulting firm: "It was easier to get up and has run more smoothly than the [Compaq] SystemPro."

Learning curve

Despite the massive efforts needed to consolidate multiple servers, users and applications on the superserver, evaluators agreed the 295 made the job easier than expected.

Government agency: "There were no major surprises. There were a few hiccups, but overall it went relatively well."

System integrator: "From the initial training to getting it up and running for the test environment, it far exceeded our expectations."

Expansion options

Adding memory and MCA boards did not seem to faze the evaluators, but the difficulty of adding storage to the RAID-5 array seemed intimidating. They rated expansion better than average.

Government agency: "When it comes to disk expansion in the RAID-5 environment, it looks like that's going to be real ugly."

System integrator: "You've got to design ahead."

Consulting firm: "It's a snap. The reference disk either sees the add-ons or it doesn't."

Interoperability

Evaluators gave the system average marks for interoperability with other servers and network operating systems.

Consulting firm: "I've been considering using the OS/2 Requester and scrapping LAN Manager altogether."

Financial services: "We tried to get LAN Manager to talk to NetWare, but we could not tie these puppies together."

Overall value

Despite higher than average costs, evaluators gave the system a high value rating for its fault tolerance and its ability to safely implement mainframe downsizing.

Government agency: "I think we've very much gotten our money back in terms of productivity — continued productivity — compared to the [previous] environment of five separate servers."

Financial services: "Extraordinarily expensive."

COMPUTERWORLD PRODUCT EVALUATION COUNCIL

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- Prudata, Inc.
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- Ryder System, Inc.
- SCM Office Supplies Group
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- Wilson Industries
- Worldcorp

IBM responds

We asked IBM the following questions based on this evaluation:

Q: Novell NetWare installations currently must run the Server 295 NetWare Requester to support users. Does IBM intend to provide native support for NetWare installations?

A: IBM plans to start the rollout of the 295's native support early in 1993. When the development work is completed, NetWare users can expect the full range of fault-tolerant, high-availability and management features available now to users of OS/2 and the Server 295.

Q: Does IBM intend to make any performance improvements in its Orthogonal Disk Array Subsystem?

A: The Server 295 performs better than other platforms with RAID-5 because of its efficient caching and high-performance disk subsystems.

Q: Will IBM add on-line updating of system software to the Server 295?

A: All the major network operating systems are moving toward remote management, and the Server 295 will take advantage of developments in this area.

Q: What server support will be added when IBM begins to deliver OS/2 2.0 with the Server 295?

A: OS/2 will support up to 512M bytes of RAM for applications demanding quick response. It is also a prerequisite for LAN Server 3.0, which supports larger numbers of users.

Q: The Model 295 seems substantially more expensive than other superservers. Why is this?

A: There is no other server like the 295. Its key features — multibus, multiprocessing, fault tolerance, ECC memory, sophisticated system management, recovery software and so on — are available on platforms priced well above the 295.

Backup. For people who don't.

Everyone who uses a PC ought to back up regularly. But most people don't back up at all.

In fact, if the people you work with are like those working in most places we know, about the only way their data is going to get backed up is if it happens without them.

Guess what?

Now it can.

Now you can set up fully automatic, unattended backups for every PC in the house – DOS,* Windows,* Novell* network servers, even Macintosh*.

What's more, you can easily customize the nature and timing of each one to suit *your* specifications.

And transform a simple, effective backup policy from fantasy into fact.

All you need is Fastback Plus.

The world's most popular backup software comes complete with a backup policy of its own – in the form of pre-designed scheduling templates* – that you can adapt with our unique Macro Editor.

What makes our Macro Editor unique?

It uses plain English commands. Which means you can actually use it.

Using Fastback Plus on a PC is very much like using it on a Mac – same look, same functionality.

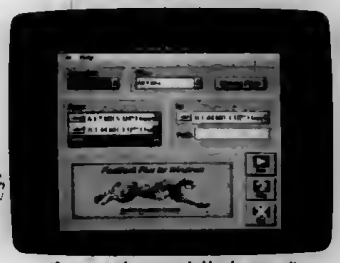
Same backups, even.

That's right. You can actually restore a Macintosh* file directly onto a PC, and vice versa.

Nobody else can do that.

But then, nobody else can back up more than 3MB per minute on an AT. Or up to 10MB per minute on a '386.

No other Windows, Mac or Network version can run fast enough to see our tail lights.



If automated, unattended backups aren't your style, you can still enjoy unprecedented convenience with our Express Menu, which InfoWorld *considers "only slightly more complicated than an on/off switch."*

And nobody else comes close to our level of reliability.

You can destroy as much as 11% of the data on a diskette and Fastback Plus will recover every last byte, error-free.

Unbelievable?

That's what the people at *InfoWorld* thought.

So they "scratched both disks with the point of a knife to simulate accidental damage" and discovered, to their astonishment, that Fastback Plus "was 100% successful at restoring all the [damaged] files."

Still unsatisfied, they "ran the test several more times, increasing the severity of damage until we began to fear for our disk drives, but we were unable to generate a single byte of unrecoverable data."

We wouldn't recommend trying this test yourself. But if you insist, you'll be glad to know that Fastback Plus is backed up by our vaunted 24-hour toll-free technical support and a one-year money-back guarantee.

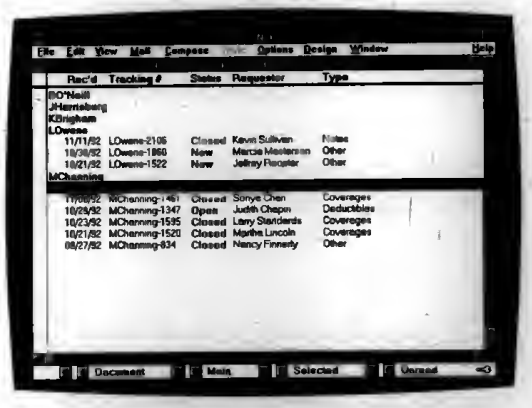
There's more. So pick up the phone. Dial 1-800-926-4289 Ext. 55.

And tell everyone to stand back.

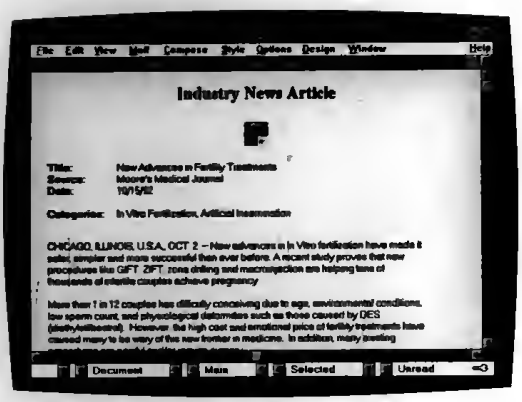
*Scheduling templates included in DOS, Windows and Network versions.

FIFTH GENERATION SYSTEMS, INC

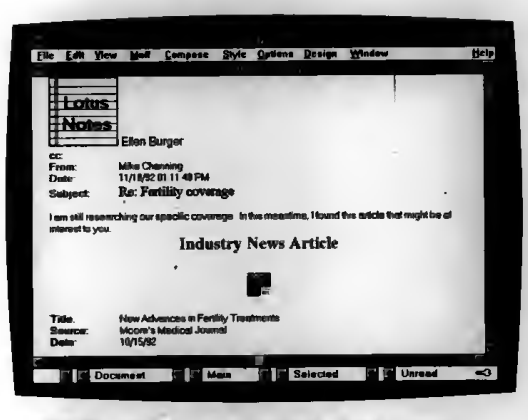
1. This is Mike's Notes desktop. Each icon represents a different database. In the course of the day, these are the ones he uses most frequently. To start the day, Mike decides to check if any new benefits questions have been forwarded his way. He double-clicks on the HR INQUIRY TRACKING icon.



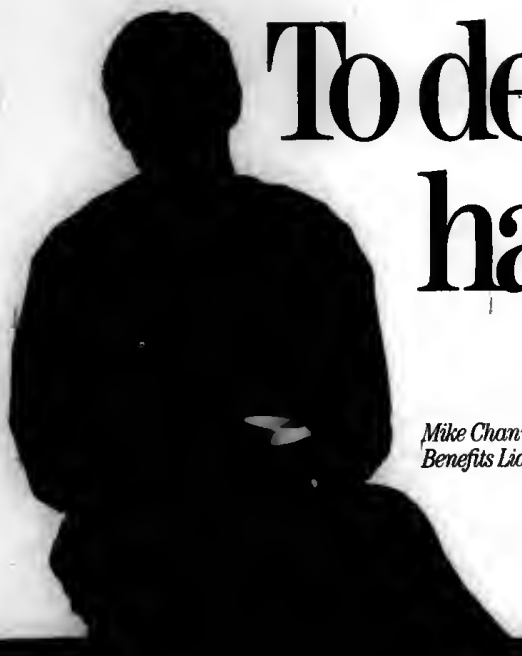
2. Well, there's one that hasn't been read. Ellen Burger has a question about her coverage. Ellen called the company's BENEFITS HOTLINE. The operator entered her query into Notes and it was automatically routed to Mike. Mike double-clicks to find out what the problem is.



5. He simply double-clicks INDUSTRY NEWS, and searches two categories: In vitro fertilization and artificial insemination. First up is a recent story from Moore's Medical Journal. Since the article includes authoritative information, he decides to forward it to Ellen.



6. Mike quickly composes a note and forwards this document directly to Ellen. That done, he gets himself a cup of coffee.



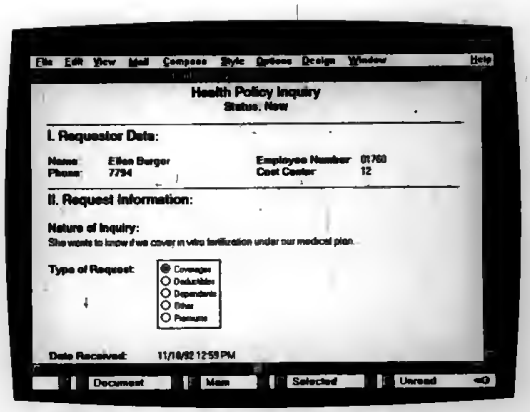
To demonstrate th had to make an

Mike Channing
Benefits Liaison

According to critics, including our competition, Lotus Notes® is one of the most exciting software products you can buy. We'd like to show you why.

More than an application development environment and much more than e-mail, Notes enables users to share knowledge anytime, anywhere. With it, you can build a new class of networked applications, without special programming skills.

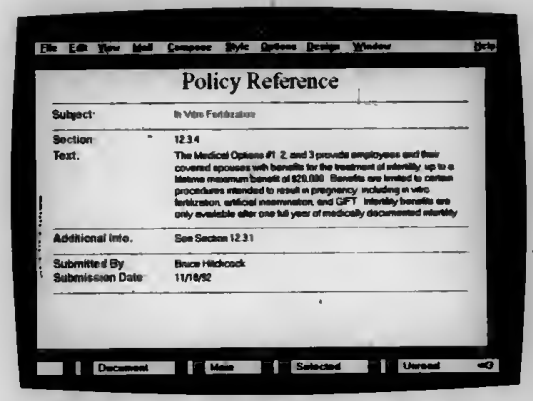
Let's watch how Mike Channing uses it: As a tracking tool for customer service. As a conferencing system for collaborative problem solving. And as a library for policies, documentation or news.



3. Up comes the inquiry screen. Ellen wants to know if the company covers in vitro fertilization. Mike, being new, is stumped. He calls his supervisor on the phone for the answer. He's not in yet. Instead of waiting, Mike decides to post the question on the GROUP DISCUSSION database, thinking that someone else might know the answer and respond more quickly.

4. He double-clicks the GROUP DISCUSSION icon. Once in GROUP DISCUSSION, he poses the question to his workgroup. Eager to help, Mike then decides to check out the INDUSTRY NEWS database for any background information that might be useful to Ellen.

7. When he gets back to his desk, Mike checks back into the GROUP DISCUSSION database for responses. Not only has Barry Kepler responded with the answer, Barry actually leads Mike to the relevant section of the corporate policy manual by creating a direct link to the document.



8. Mike clicks the DOC LINK icon. Up comes the relevant section of the policy. Mike jots a quick message and forwards both to Ellen. Job done, in less than 10 minutes, by easily tapping into expertise both inside and outside the company.

e power of Notes, we example of Mike.

Watch how Notes organizes information so it's easy for Mike to get the answers he needs. How effortlessly he taps his workgroup's knowledge. How quickly he accesses conventional references. Now you can see why people who have Notes build their work around it. And why the companies that have installed Notes have seen as much as a 400% return on their investment.*

Now, consider that any business can afford it. A Notes Group Pack™ will have ten people working together for under $5000. It includes 10 of our most popular Notes applications including SALES MANAGEMENT, LEAD GENERATION and POLICY HANDBOOK, as well as complete installation and usage documents. For information call **1-800-828-7086, ext. 7324,** or your local Notes VAR.

Lotus Notes

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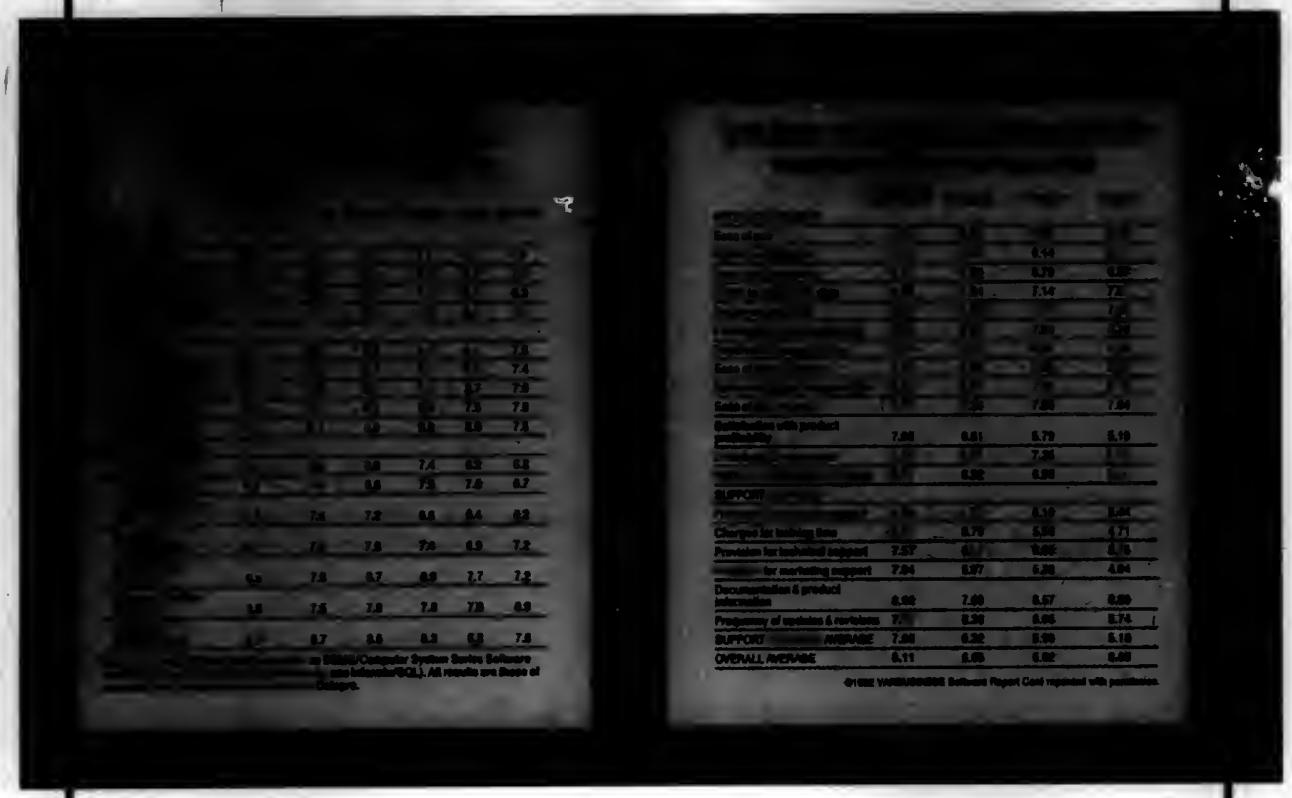
IF LOGIC ALONE DOESN'T CONVINCE YOU TO USE PROGRESS, THEN HOW ABOUT A LITTLE PEER PRESSURE?



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CPWADV1221

Workgroup Computing

CREDIT UNION DOWNSIZES TO WAN, 40

Selective data copying

Lotus to improve Notes' replication

By Rosemary Cafasso

Replication, a key technology behind Lotus Development Corp.'s workgroup platform, will get a performance boost with the shipment of Notes Version 3, now scheduled for early next year.

Lotus is working to bolster Notes' replication technology to make it more efficient and help users selectively copy data from Notes databases. Notes relies on replication and its synchronization function to allow users to share documents. These functions create multiple copies of databases and periodically update them to ensure they contain the same information.

"Version 2 did a lot for replication, and Version 3 will do a lot more," said David Marshak, a senior analyst at the Patricia Seybold Computing Group in Boston. "A lot of user feedback has pushed it far from where it was in Version 1."

Added bonus

Unlike the current Notes offering, Version 3 will allow users to select a slice of a database to replicate. This will be a bonus for the more mobile customers who are currently replicating databases from servers and downloading the entire file to their laptops.

With Version 2, "you'd get a replica that was a whole database, say 10M bytes or 15M bytes," said Steven Beckhardt, a consulting engineer and founder of Iris Associates, Inc., the developer of Notes. "You can get that on a notebook, but that's a big chunk of data."

With Version 3, "you can design your replica with a formula," Beckhardt added.

Unlike others

Replication is perhaps the key function that distinguishes Notes from other workgroup and database software. Back in the mid-1980s when Iris was putting together the original Notes, it proceeded with the replication concept, which was well-known in academic circles and considered a departure from more traditional database approaches.

Replication does not rely on the complex mechanisms such as two-phase commit, locking and concurrency control that are used in other databases to prevent the corruption of data. These processes prevent two simultaneous updates to the same piece of data.

Keeping data in sync

- Replication and synchronization work well in Notes because its databases are used mostly for information sharing rather than transaction processing.
- To prevent occasional data conflicts, Notes users can use the software's security mechanisms to control access to documents.
- If a conflict occurs, Notes saves the updates and flags the conflict for resolution.

Instead, Notes is based on the assumption that many of the information-sharing applications created on this platform do not require that complex a set of controls.

For example, discussion databases are common in Notes, and each entry is considered an additional document to the original discussion topic as opposed to a modification or edit to the original document.

Although conflict is rare, it can happen. But it is uncommon enough that Iris determined the replication technique was suitable.

With replication, a customer determines a time for synchronizing data, which could be once a day or perhaps every three hours. At that time, each server on the Notes network will contact the other servers and essentially

Replication, *page 40*

LAN control falling to IS

By Michele Dostert

As local-area networks become larger, more complex and more mission-critical, the responsibility for managing them is landing squarely on the shoulders of corporate information systems groups. IS managers are finding that supporting LANs requires them and their staff to develop new technology, people and organizational skills.

The number of LAN segments in corporate America will grow by 250% by 1995, while network managers' budgets will increase by only 50% and staff will grow by just 10%, according to a study by Infonetics Research in San Jose, Calif.

Analysts cite two reasons for the trend: data and applications on corporate LANs are becoming more valuable, and departments are beginning to realize the "hidden costs," in both personnel time and downtime, of supporting their own LANs.

"The server side of client/server computing has to be centrally managed to ensure that things like backup, security, resource administration and systems management are properly done," said Bob Gill, a LAN industry analyst at Gartner Group, Inc. in Stamford, Conn. "If IS people let mission-critical data sit on LANs that they don't control, they are asking for big trouble."

Control is key

Michael Blackman is an assistant vice president at Maryland National Bank in Baltimore, which is in the midst of a project to recentralize control of its distributed LANs. The LANs support more than 1,000 users. "We're taking over the LAN management so that our businesspeople can spend more time thinking about business and less time thinking about their network," he said.

LAN users may be glad to give up LAN support aggravation, but they hate to give up the control

LAN management, *page 40*

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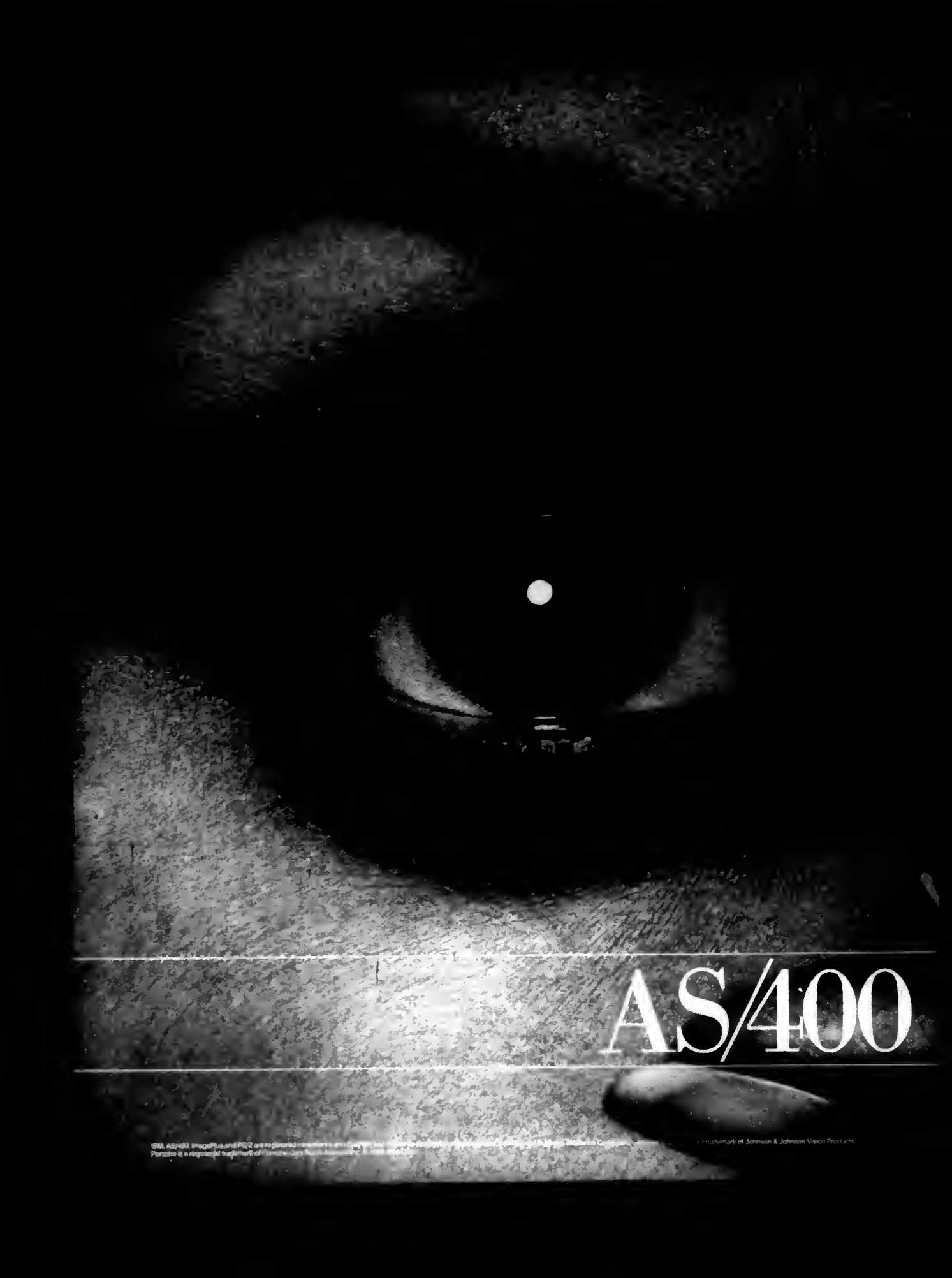
By the end of this week Computerworld readers will have spent over $79.4 Billion on Information Technology this year – representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD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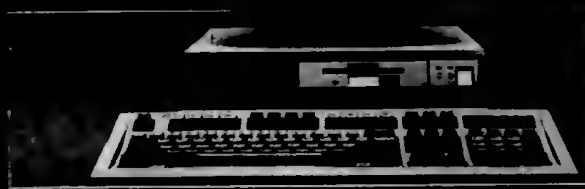

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IBM®

4381 replacement

Credit union downsizes to PS/2 net

By Linda P. Musthaler

While many companies today are downsizing their computer applications, few can say they have replaced their IBM system 4381 mainframe with a PC server and DOS-based applications.

The Pacific IBM Employees Federal Credit Union (PAC IBM) can make that claim. In the past year, PAC IBM has downsized all of its core business applications from the mainframe to a wide-area network that is totally microcomputer-based, including the file and data servers. At the center of it all is an IBM Personal System/2 Model 95 that acts as the host data server for relational databases.

Based in San Jose, Calif., this independent credit union has 49,000 members with more than 150,000 accounts ranging from savings and checking to mortgage loans and major credit-card accounts. The company also provides automated teller machines (ATM), audio response services and limited commercial account services to its members.

Driven by the need for application flexibility, PAC IBM began considering a downsizing effort several years ago. The company was feeling boxed in by its old information systems. The mainframe software, which was a mix of RPG and Cobol, had been purchased in 1972 and was due for an update. The ATM applications included software the vendor could not support anymore.

Programmers spent more time maintaining old systems than developing new applications that could help the business grow. The applications also suffered from severe limitations and frequent downtime. President and Chief Executive Officer Daryl Tanner noted, "We needed a new approach."

Setting goals

The credit union outlined its goals for the new information system: quality services, expandability, development controls, financial controls, timely improvements, sustainable growth and creation of a "can-do" culture. PAC IBM shopped around for systems and suppliers that could help meet those goals, eventually choosing a client/server architecture offered by database company Prologic Computer Corp. and development house Telos Financial Services.

IBM Professional Services was brought in to manage the project and install the equipment. While the credit union was free to choose non-IBM gear, it chose IBM hardware for its reliability, capacity and performance and also to showcase PAC IBM's sponsor's latest client/server technology, according to Tanner.

Perhaps the most unique aspect of the project is the network and applications that were implemented. The network, which spans eight branch locations plus the home office, consists totally of PS/2s. While the network operates on Novell, Inc. NetWare, the workstations and the central data server ran the core applications under DOS.

A Telos fourth-generation language called Probe was used to develop the Credit Union Business Environment (CUBE). The CUBE system provides a central information file, teller automation, new account setup, loan origination, deposit and loan accounting and an executive information system (EIS).

Dian Kiwiet, vice president of MIS, said the EIS has been one of the system's best features. "The first thing each morning, executives are able to access information regarding the performance of the credit union as of the close of business the previous day," Kiwiet said.

The CUBE applications run in a truly distributed environment. Each credit union branch has its own local-area network with a server.

The tellers' workstations preprocess and verify business transactions, such as deposits and withdrawals. All actual account transactions are performed by the central data server at the home office via a commercial high-speed communication line. With an average of 35,000 transactions per day, the system has a response time of under three seconds per transaction.

The system was brought on-line in less than a year. The company cites the following three lessons learned through this experience:

- Contract the network cabling to an experienced firm.
- Conduct rigorous "stress testing" of all applications prior to conversion.
- Contract for all required resources up front.

PAC IBM has invested about $1.6 million in its downsizing effort, including $471,000 for software, $907,000 for equipment and $223,000 for the network. The cost to lease the mainframe was about $1.3 million per year.

Tanner said the credit union is saving about a quarter-million dollars annually because of the change.

While pleased with the savings of the system, Tanner said he is more delighted with the flexibility it brings. "The tellers appear more knowledgeable and experienced to the customers because they can answer questions so quickly," Tanner said.

Musthaler is an industry analyst at Currid & Co., a Houston-based consulting firm specializing in technology assessment and application.

ON SITE

PAC IBM
San Jose, Calif.

Challenge: To implement distributed processing that would empower end users with customer account information and increase flexibility for managing products and services.

Technology: Prologic's Probe postrelational database management system and application development environment on a Novell network of about 160 PS/2 workstations and a central PS/2 "host" data server.

Results: Greater operational flexibility and annual savings of about $250,000.

LAN control falling to IS

CONTINUED FROM PAGE 37

over their computing destiny. IS departments taking over the management of distributed LANs are learning to talk with, instead of down to, their customers.

"Our position has changed to be more of a technical facilitator, a service provider, rather than 'keepers of mysteries,'" said Mike Wenger, director of MIS planning and operations at Rayovac Corp. in Madison, Wis.

Treading delicately around user egos is a must when seeking to enforce LAN standards. Many IS departments are inheriting a mishmash of different topologies, hardware, LAN operating systems and applications, installed by department managers with no IS guidelines to follow.

Fancy footwork

As a practical matter, users must be migrated to common hardware, operating system and applications standards, but IS managers said it takes delicate footwork to move a department from one word processing system to another without bruising user feelings.

At Rayovac, if users feel they cannot meet a business need with the technology currently on the IS standards list, a committee of users and IS is formed to investigate and add new technology, if needed, to the list.

IS management teams must also be careful that the data integrity, security and backup procedures they implement on department LANs do not decrease LAN performance to the point that users long for the chaotic good old days.

"If suddenly for some reason you can't access the printer or your database, users will be right back in the horrors of time-shared computing, which is precisely what they bought PCs to avoid," said Dana Peck, a development manager at Pacific Power and Light in Portland, Ore. He said there can be particular problems when IS manages LANs remotely.

Traditional mainframe IS distinctions between communications, systems and the applications specialists do not apply in the LAN environment.

What looks at first glance like an application error could actually be caused by the client BIOS, the client network card, the client operating system, the LAN operating system or any of 20 different things, said Larry Quinlan, manager of LAN services at Deloitte & Touche's data center in Nashville.

Stan Schatt, a LAN analyst at Computer Intelligence/Infocorp in Santa Clara, Calif., added, "LANs are changing IS personnel as much as MIS is changing LANs; it's teaching them how to talk to their users and how to talk to each other. That's the key to good, centralized LAN support."

Lotus boosts Notes' replication

CONTINUED FROM PAGE 37

compare databases in determine if modifications have been made. Servers keep track of modifications through time stamps, which each database and documents within databases receive when created and modified. The databases will then be synchronized so changes are reflected on each replica.

Users, analysts and Lotus itself pointed out that because of this approach, Notes was not designed for very high-volume transaction processing.

"We say you should not view Notes as a replacement for transaction processing if you think about transaction processing in the traditional sense," said John Landry, Lotus' senior vice president and chief technology officer.

The bad news is that if two users update data simultaneously in a Notes environment, a conflict will be created. The good news is Notes will automatically flag the data and retain the two simultaneous changes. The user must then resolve which change is the appropriate one.

Their way

Notes customers said they are impressed with replication technology but are also aware of data conflicts that replication can cause. Some have devised procedures to minimize potential data conflict problems.

Peoplesoft, Inc. created separate guidelines for Notes and for relational databases.

"We have a document that says, 'If it meets this portfolio, then it goes into Notes,'" said Rick Bergquist, vice president of technology. "If not, it doesn't go into Notes."

Bergquist said Notes does not handle cross-editing well "with tables like a relational database. But for sharing information, Notes is really strong."

Cellular technology may rival fiber-optic networks

By Joanie M. Wexler
WASHINGTON, D.C.

■ A high-speed cellular technology is emerging that could ultimately usurp fiber-optic cabling for carrying heavy-duty telecommunications applications. Its success, however, hinges on a few regulatory "ifs."

The Federal Communications Commission (FCC) this month approved the use of "CellularVisiou," a technology patented by CellularVision in Freehold, N.J., for running high-bandwidth applications over the natiou's airwaves. Traffic traveling in CellularVision's 27.5- to 29.5-GHz FM radio band could include videoconferencing, high-definition television, medical imaging, multimedia and high-speed data, according to CellularVision inveutor Bernard Bossard.

Bossard said uncompressed information could travel at about 1G bit/sec. and that the technology requires a transceiver and modem at each communicating site.

How the FCC will allocate the CellularVision spectrum remains a question — and one that will likely determine the usefulness of the technology to the business user. Benefits will depend on "how the FCC decides to divvy up licenses geographically, how many licenses are granted and how much spectrum each licensee gets," said Brian Moir, a partner at Fisher, Wayland, Cooper and Leader, a Washington, D.C., law firm that provides counsel to the international Communications Association user group.

Nationwide licensing

For example, if the FCC issued a single nationwide license, it would result in a seamless network for users, who would not have to contract with several carriers for interconnecting wireless segments. This could solve some of the problems faced by today's analog cellular telephoue networks, where rates remain high because the spectrum is licensed in local chunks "and the interconnect charges between service areas are a fortune," Moir explained.

But the downside of a single license "is that the resources required to build a system like that [nationwide] are significantly higher," he said.

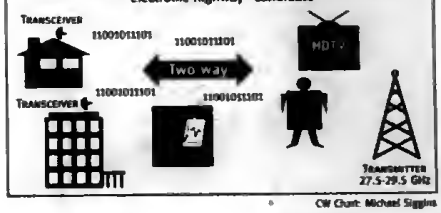
These issues parallel those with emerging personal communications networks (PCN), which will someday issue nomadic users a single, mobile phone number. One PCN proposal to the FCC from MCI Communications Corp. is to allocate spectrum to a small number of consortia nationwide in order to deliver both the seamlessness and the resources required to fund the network infrastructure [CW, Nov. 16].

Depending on how the specifics play out, CellularVision could fill a gap in the growing mobile computer market: Today's relatively slow (19.2K bit/sec.) wireless wide-area networks are frustrating users who are accustomed to local-area network speeds. Also, users such as John Faccibene, vice president of telecommunications at Garban Ltd., a New York brokerage firm, said he sees CellularVision's capabilities as providing the bandwidth and flexibility for creating virtual offices or trading floors, particularly in a disaster recovery situation.

"During the floods here in New York City, a lot of companies lost their trading rooms," he said. "Imagine if they had ability to move to another location via wireless."

Fiber challenge

CellularVision's broadband wireless technology: a new "electronic highway" candidate



CW Chart: Michael Siggins

A high-speed wireless network could preclude the expensive and time-consuming task of laying fiber to all doorsteps to make services nbiquitous, added Andrew M. Seybold, publisher of the "Outlook on Computing" newsletter. He said that in an urban area, "cable is probably cheaper because i can run a cable down a major street and pull drops off of it. Each drop would be less expensive than having a separate transmitter and receiver at each user location."

However, he said, "the cable companies cannot make their systems two-way [interactive] without a tremendous upgrade."

Bossard said several Bell telephone companies have expressed interest in CellularVision. An Ameritech Co. spokesman confirmed that his company has "had some conversations with CellularVision, but it is too early to assess how it might fit into the overall scheme of wireless communications."

'Better' cellular

Each CellularVision cell spans 6 to 8 miles in diameter. When transmitting among cells, CellularVision reuses the same frequency so the full 2 GHz is continually available.

This differs from today's analog cellular phone network, through which communications change frequencies from cell to cell. This reduces the amount of bandwidth available.

CellularVision rivals fiber-optic capabilities, transporting traffic at 1G bit/sec. speeds.

U.S. Post Office puts address changes on-line

By Gary H. Anthes

If you tend to think of the U.S. Postal Service as just a mite stodgy technologywise, check out the Postal Buddy — an interactive, multimedia kiosk coming to a supermarket or shopping ceuter near you.

The first of some 10,000 Postal Buddies has been installed in the Washington, D.C., and San Diego metropolitan areas. The devices are intended primarily to process change-of-address notifications, which cost the Postal Service $1.3 billion annually and the public an uncouuted sum of aggravation.

The user-friendly talking devices can also print custom business cards, stationery, mailing labels and a few other items while you wait.

Postal Buddy is the product of an unusual private/public partnership between Postal Buddy Corp. in San Diego and the Postal Service. Systems integration and software development were done by Electronic Data Systems Corp.

The Postal Service predicted that half of all address changes will eventually be processed by Postal Buddies, saving between $300 million and $500 million in data-entry labor during the 8½-year contract, according to a Postal Service spokesman. In addition, the Postal Service will collect a "small royalty" from the sale of products such as mailing labels, he said.

Postal Buddy's brain is an Intel Corp. 1486 microprocessor running OS/2, which is integrated on the motherboard with an Intel i750 Digital Video Interactive chip for audio, video and high-resolution graphics. Software drivers control 27 internal peripherals including dual 213Mbyte disk drives, a CD-ROM drive, a 9.6K bit/sec. modem, a 16-in. color monitor, a thermal receipt printer, a credit-card reader, a postage stamp dispenser and a laser printer.

10,000 Postal Buddies *will be installed across the country*

Postal Buddy's application software was written by EDS in Digitalk, inc.'s Smalltalk object-oriented programming language, and low-level device drivers were written in C. Object-oriented programming was chosen for the application because it will facilitate the rapid development of new Postal Buddy products and services, said Timothy May, account manager at EDS.

Using voice and video prompts, Postal Buddy guides users to enter change-of-address information via keyboard and touch-screen sensors. Old and new addresses are validated locally by scanning a CD-ROM database of 120 million addresses for the new "ZIP + 4" codes. The user may

Post Office, *page 42*

Buddy's resume

Postal Buddy can:
- Lower its keyboard and screen for people in wheelchairs.
- Accommodate address changes weeks in advance.
- Print business cards.
- Produce customized letterheads in minutes.
- Dispense stamps.
- Provide a "Thinking of Moving" service that gives information about cities selected by users.
- Accept payments in cash, automated teller machine card, credit card or a special Postal Buddy Money card.
- Print an itemized receipt.

Net vendors up services, consulting ante

By Lynda Radosevich

■ Users thinking about linking their local-area networks have a new source of expertise: Like the systems manufacturers and independent consultants before them, networking vendors are jumping into the consulting and services game.

The vendors offer services ranging from limited design and installation to full-blown consulting and multivendor maintenance contracts. What they say they have to offer that the big consultants and systems vendors do not is expertise specific to the networking technology they sell.

Analysts warn that users should be on guard but say vendor services and consulting do have a place.

"The big problem is credibility," said Charlie Robbins, director of communications research at Aberdeen Group in Boston. "Suppliers are looking to develop closer relations with end users, but objectivity is difficult because this is a distribution vehicle."

A matter of bias

Janet Hyland, director of network strategy research at Forrester Research, Inc. in Cambridge, Mass., agreed that vendors have more internetworking experience than an unbiased source such as Electronic Data Systems Corp. or Andersen Consulting. While most large companies handle their own internetworking, she said, companies jumping into new networking technology or servicing remote sites may find vendor services attractive.

Recent service announcements by networking vendors include the following:

- Cabletron Systems, Inc. announced in November that customers of Silicon Graphics, Inc., a Mountain View, Calif.-based manufacturer of graphics workstations, can receive Cabletron customer support services at variable costs — including network design and management of non-Cabletron products. Customers can use Silicon Graphics as their single point of contact to access Cabletron and other vendors.
- In November, 3Com Corp. added six network integration companies to its design, installation and multivendor support programs. The companies, which resell networking equipment from 3Com and other vendors, will be able to dispatch 3Com service engineers as part of their overall service programs. The advantage to customers is a single contact for problems and guaranteed interoperability between various network components, said Southwest Network Service, a network management company in Austin, Texas, that joined the 3Com program.
- Ungermann-Bass, Inc. announced new integration services that will help customers design, install and support multivendor networks.

These companies are looking to grow their businesses in what Hyland said she sees as a large but already competitive market. "I don't see service vendors doing handstands about the money they are making in the service market," she said. In addition to competing with independent consultants and systems vendors, the networking providers must compete with companies' own staffs for network service and support dollars.

Early customers have had mixed success.

Jim Pointer, a telecommunications analyst at The Quaker Oats Co., found that while he had plenty of expertise with the technology at the Chicago administrative offices, Cabletron's design and installation services were helpful in expanding Ethernet networks at remote distribution sites throughout the country.

After closely working with Cabletron engineers to define standards, Pointer said he was comfortable enough to let them start setting up distribution centers on their own.

Money in the bank

The cost of service is largely worked into hardware costs, Pointer said, and the company may have saved money because "we just don't have the bodies at the remote sites and would have had to hire someone anyway."

Dave Northrup, director of information systems at the University of Alabama Health Services Foundation, discovered that one vendor's consulting service (which he asked not to identify) wanted to install an expensive network in the foundation's new five-story clinic building.

After turning to independent consultancy Andersen Consulting to design and install the 400-node network (which connects to the affiliated hospital system), Northrup said he defrayed $200,000 of Andersen's $300,000 fee in savings over the network the vendor had planned to install.

The vendor "was pushing their own stuff. I felt better getting an independent consultant," Northrup said.

Post Office

CONTINUED FROM PAGE 41

also select names from among 200 periodicals and catalogs for automatic notification of address changes by the Postal Service.

Each night the address changes and other information are retrieved via phone by a communication server at Postal Buddy headquarters in San Diego. After additional validation and posting of financial information to Postal Buddy's books, the address changes are sent electronically to the Postal Service's computerized mail-forwarding system at the National Address Information Center in Memphis. From there, address change data is sent electronically or by paper to the businesses selected by the user.

> Every year 42 million Americans change addresses, generating 2.3 billion pieces of mail and costing the Postal Service $1.3 billion

Postal Buddy's 27 peripherals contain varying degrees of intelligence, May said. When one of them senses it is having a problem — a paper jam, for example — it immediately sends an alert to San Diego. There, technicians can route it to an EDS service center in Dayton, Ohio, which may generate a trouble ticket to dispatch a local repair person.

The public can use the devices free of charge for address changes — saving on postage that would have been used for the traditional notification post cards — and can expect to see changes posted faster and with fewer errors, a company spokesman said.

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WAN hardware

Patton Electronics Co. has introduced the Patton Model 2020, a miniature, passive interface converter that lets a synchronous RS-232 host or terminal communicate with a Digital Service Unit/Channel Service Unit incorporating a V.35 interface.

Batteries or AC power are not required, and Model 2020 supports data rates of up to 200K bit/sec. The product is protocol-independent and can communicate either in full or half duplex. Two different modes are available: Data Terminal Equipment (DTE) to Data Communication Equipment (DCE) and DCE to DTE.

Each version of Model 2020 costs $295.

➤*Patton Electronics*
7958 Cessna Ave.
Gaithersburg, Md. 20879
(301) 975-1000

Proteon, Inc. has introduced the GNX (Gateway Network Exchange) 400 gateway and the DNX 3001 (Departmental Network Exchange) Bridging Router.

The GNX 400 has the capability to transport IBM's Systems Network Architecture (SNA)/Synchronous Data Link Control data over a local- and wide-area network internetwork to a LAN-attached host. The DNX 3001 can send SNA and non-SNA traffic across a multiprotocol backbone to an assortment of hosts.

GNX prices start at $11,000, and the DNX 3001 starts at $5,495.

➤*Proteon*
9 Technology Drive
Westboro, Mass. 01581
(508) 898-2800

Links

Photonics Corp. has introduced Collaborative PC, a wireless networking product designed for transmitting data from portables to desktop computers.

The Collaborative PC allows a desktop computer to serve as a link to the wired network and as a docking station for portable computers. The product comprises an internal half-card for an XT/AT bus or Extended Industry Standard Architecture bus plus an external tethered transceiver. Data is transmitted at 1M bit/sec.

Collaborative PC costs $250.

➤*Photonics*
2940 N. First St.
San Jose, Calif. 95131
(408) 955-7930

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Lotus Notes Document Imaging

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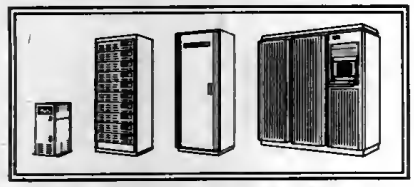
Life is full of tough choices: A performance car vs. a practical car. A job that satisfies your pocketbook vs. one that satisfies your mind. A disk storage solution that offers speed vs. one that offers complete data availability. Well, the last choice just got easier to make. Because, right now, there's the Symmetrix 5500 ICDA™ from EMC.

The disk storage system on the left is known for speed. The disk storage system on the right is known for continuous operation. Fortunately, they're one and the same.

On one hand, the Symmetrix 5500 is fast. It's based on EMC's Integrated Cached Disk Arrays (ICDA™), which means it can access information on an IBM or compatible mainframe computer almost as fast as you can say "Where's my data?"



The Symmetrix 5500 is part of an entire line of disk storage systems based on EMC's Integrated Cached Disk Arrays (ICDA™).

On the other hand, the Symmetrix 5500 offers continuous operation. Which means you'll have access to your data 24 hours a day, seven days a week, with no costly downtime.

But the benefits of the Symmetrix 5500 don't end there. It also offers high capacity per square foot, low power and cooling requirements and a two year warranty that all add up to a maximum return on your storage investment.

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NYCE switches to 'insourcing'

By Thomas Hoffman
SECAUCUS, N.J.

The NYCE network, the largest electronic funds transfer (EFT) network in the Northeast, stands to reduce its transaction processing costs by 20% annually by "insourcing" its data processing operations. NYCE recently flipped the switch on its first data center after completing a seven-year outsourcing relationship with Deluxe Data Systems, Inc. in Glendale, Wis.

NYCE's move to insource when many other companies are outsourcing was driven by several considerations, according to Steven A. Rathgaber, vice president of operations and systems at NYCE. The EFT market is maturing and becoming more predictable, and it would be less expensive for NYCE to do its own transaction processing than to farm those services out to Deluxe Data Systems, he said.

"We realized that the cost per transaction would be 10% to 20% lower than what Deluxe was charging us," he said.

With more than 76 million transactions processed in September, NYCE is the second-largest aggregate switching company in the U.S., according to "Bank Network News," a Chicago-based banking technology publication. In the switching market — where EFT networks process automated teller machine (ATM) transactions among member banks — NYCE is ranked third, with 16.8 million switch transactions in September.

NYCE's 15% transaction processing growth during the past two years — combined with plans to deploy future electronic services such as point-of-sale debit transactions for retailers — helped NYCE decide to create its own data center, Rathgaber said. Real estate conditions were also favorable.

NYCE's Steven Rathgaber *says insourcing will reduce the exchange's transaction costs by 10% to 20%*

ON SITE

NYCE
Secaucus, N.J.

Challenge: To transfer transaction processing operations from a third party to a data center.

Technology: Cyclone fault-tolerant systems and Connex 5.4 switching software, a communications management system.

The network took over a data center once occupied by Columbia Pictures Industries, Inc., which had consolidated its operations in Los Angeles. Because Columbia was anxious to transfer its lease, NYCE was able to include uninterruptible power supply systems and diesel generators with the data center.

Tandem chosen

Deluxe Data Systems had processed NYCE transactions under a Tandem Computers, Inc. VLX fault-tolerant computing environment. Rathgaber said NYCE evaluated fault-tolerant hardware from Tandem, IBM and Stratus Computer, Inc. but opted for a Tandem Cyclone because "we felt that Tandem offered the best price and had the lead among other vendors in added utilities." Plus it would be easier to migrate from one Tandem environment to another, he said.

NYCE installed the software in June and added the eight-CPU Tandem Cyclone in July. It also replaced analog telecommunications with a Racal-Datacom, Inc. communications management system. NYCE's network infrastructure includes X.25, IBM's Systems Network Architecture and bisynchronous connections between the Tandem system and mainframes at member banks.

NYCE cut over to the new data center on Nov. 10. The biggest migration challenge was transferring a project plan containing more than 2,000 individual tasks once handled by Deluxe to NYCE, Rathgaber said. To help smooth the migration, Rathgaber lured Vern Counter, who had previously directed NYCE's operations at Deluxe, to man-

Insourcing, *page 46*

Middleware speeds client connection

By Jean S. Bozman

■ In the client/server universe, you can get there from here, but you need a gateway and a protocol translator to do it. As the trend toward client/server computing accelerates, more vendors are announcing middleware to connect desktops to host databases. Users said they believe the new client/server middleware will speed application development, which is often slowed by the complexity of connecting each type of client to each type of server.

At the same time, the arrival of advanced database packages for PC clients, including Microsoft Corp.'s Access and Borland International, Inc.'s forthcoming Paradox for Windows, is boosting demand for middleware to simplify client/server links. Two new application programming interfaces (API), Microsoft's Open Database Connectivity for relational databases and Borland's IDAPI for relational and nonrelational databases, will allow client queries to address more than one database server.

Until recently, users had little choice but to install point-to-point gateways between specific combinations of clients and servers. But prepackaged gateways are already widely used, and many users are writing custom software to do the job. "We're finding that gateway technology is definitely going into production," said Peter Kastner, a senior analyst at the Aberdeen Group in Boston. "That means that users are getting their sleeves rolled up to do client/server applications."

Because middleware is scarce, some users have already taken matters into their own hands. At Texaco, Inc.'s Houston headquarters, a team of database programmers has designed a "virtu-

Middleware, *page 46*

DEC, IBI ease legacy data access

By Melinda-Carol Ballou

■ Digital Equipment Corp. and Information Builders, Inc. (IBI) have announced a partnership that will provide DEC Accessworks servers with gateways to 50 additional databases through support of IBI's Enterprise Data Access/SQL (EDA/SQL).

"DEC had to do this," said Lynn Berg, a director at Gartner Group, Inc., a market research firm based in Stamford, Conn. "IBI has become the de facto standard for the way people plan to access legacy databases."

"It wasn't that you couldn't get to all that data before — there were plenty of ways, but none of them were much fun and this makes it easier," said Michael Goulde, an analyst at the Patricia Seybold Group, a Boston-based market research firm.

IBI's EDA/SQL is a family of products that provide SQL-based access to relational and nonrelational data across multivendor platforms via EDA/SQL Server, API/SQL, EDA/Link, EDA/Extender Products and EDA/Gateways (see story below).

DEC's Accessworks is a prepackaged group of servers that connect desktops to five databases and file systems: IBM's DB2, IMS and VSAM; Oracle Corp.'s Oracle; DEC's Rdb; and applications such as Microsoft Corp.'s Excel and Lotus Development Corp.'s 1-2-3.

Accessworks supports clients running Microsoft's Windows, IBM's OS/2, Apple Computer, Inc.'s Macintosh, DEC's OpenVMS and Unix.

"The nice thing about Accessworks is its flexibility — [users will be able to] either use the warehousing facilities available with Rdb or with EDA/SQL," Berg said. "Or they could use [Accessworks] as a straight pass-through facility from one application to another, so that the server becomes essentially a highly intelligent gateway."

Accessworks and EDA/SQL also support DEC's Open Database Connectivity (ODBC) driver for Rdb, which will allow users to bring data to Rdb from Windows environments when it ships next year.

A Deferred Query Utility, also announced for DECquery applications running on an Accessworks server, allows users to schedule data requests to run at specific, preset times.

Beta-test site users spoke well of the new technology. Rod Cressey, user services manager at the University of California at San Diego, uses client/server computing to stave off costly upgrades to IBM mainframes. Cressey, who tried an early version of DECquery, plans to use the new IBI/Accessworks product with DEC's Deferred Query Utility. "We are very cash-tight right now," Cressey said, citing budgetary pressures created by the recession. "I ask users to run their queries at night so that I won't have to buy more hardware very soon."

Accessworks support for EDA/SQL is expected to ship during the first quarter of 1993, and DEC is also building Rdb extensions to EDA that are likely to be available in that same time frame, according to internal DEC sources. Pricing for the products will be announced at that time.

Middleware

CONTINUED FROM PAGE 45

al data server" that connects Sybase, Inc. end users with four target databases: IBM's DB2, Sybase, NCR Corp.'s Sharebase and Computer Corp. of America's Model 204. "The application is free to go to any database it wants," said Tom Peters, manager of data management at Texaco's exploration production technology department. The virtual data server took two years to design and build, Peters said.

Some sites use front-end database tools to generate database-specific queries. Relational databases can theoretically be accessed through industry-standard SQL queries; the problem is that each database vendor supports its own brand of SQL extensions, analysts said. "SQL is like Victorian children: It should not be seen or heard," Kastner said. "We're moving into a new generation of smart front-end tools that know how to spit out the relevant SQL."

But there are other ways to gain client/server connectivity. Many Oracle Corp. sites use Oracle's SQL Net 1.0 to make the protocol translations between client applications and target database servers. "There are lots of ways of moving data from one point to another," said David Kreines, a senior project manager at the Educational Testing Service in Princeton, N.J. "All of the Oracle tools and applications talk to SQL Net, but you have to know which client is going to which server to make the connection." That is because both PCs and servers must run protocol translators for specific combinations.

The new wave of client/server middleware is expected to speed application development, even though it may prevent some database-specific features from being used by client/server queries.

For example, a new version of Oracle's SQL Net 2.0, due to ship in 1993, will contain a piece of middleware called the Multi Protocol Interchange to automatically translate protocols between clients and servers.

Burgeoning market

A number of data-access packages were announced at the recent Database World and Client/Server World shows in Chicago, including the following:

■ Information Builders, Inc. broadened its EDA/SQL server software with versions for Novell, Inc. NetWare networks, IBM mainframe CICS transaction monitors and DEC Accessworks routers. IBI's EDA/Link handles data translations between clients and servers, while an EDA/SQL interface links client applications to server databases.

IBI's Novell-compatible software will support NetWare Loadable Module clients and Novell's IPX/SPX networking protocols. The Novell modules will become available in the first quarter of 1993, said John Senor, vice president of IBI's Enterprise Data Access division.

IBI is building the NetWare Router for EDA, which can send EDA/SQL queries to Novell's NetWare SQL and Novell's Btrieve databases. IBI is also writing the EDA Gateway for NetWare. As a result, the EDA Gateway will now support 80 NetWare applications and tools.

The new IBI products will also support Novell's NetWare for SAA, which connects with EDA/SQL servers for IBM's MVS, VM and OS/2. "This is real nice for users because this removes some of the logical isolation of the NetWare LANs and lets them plug into the enterprise," said Herb Edelstein, a partner at Euclid Associates in Potomac, Md. "Users could do this for themselves, but it would require an enormous amount of effort and money."

■ Micro Decisionware, Inc. said its Database Gateway product will support Microsoft's Windows NT operating system. By April 1993, the firm will also have gateways between OS/2 clients and IBM's relational database servers for DB2, SQL/DS and OS/400 under IBM's Distributed Relational Database Architecture technology.

■ Sterling Software, Inc.'s Dylakor Division said it will begin shipping its client/server Journey product in February. Journey connects PC spreadsheets with mainframe databases, such as IBM's DB2 relational database and IBM's IMS hierarchical database.

A companion product, the Answer/Server, will extract DB2 and IMS mainframe data for access by PC users.

—Jean S. Bozman

[redacted]

System software

BlueLine Software, Inc. has released Vital Signs for VTAM 2.0, a new version of its network and VTAM performance monitor.

The product provides MVS, VM and VSE sites with the ability to monitor and report on both network and VTAM performance data via historical reports and real-time displays, the company reported. New "point-and-shoot" capabilities enable users to view network statistics by navigating the network. Starting at a high-level network or sessions statistics display, users place the cursor on a line to view performance data down to the logical unit or terminal level.

Prices start at $8,680.

➤BlueLine Software
Suite 690
5775 Wayzata Blvd.
Minneapolis, Minn. 55416
(612) 542-1072

Tone Software Corp. has announced Release 4.2 of OMC-Print, a print management tool.

The product provides spooled output routing to almost any VTAM print device. According to the company, any type of data residing in the JES spool can be printed on non-JES print devices. OMC Print functions include an enhanced Command Display Facility that can be run as an ISPF application; expanded job selection criteria; and expanded device support, which includes IBM's Application System/400, System/36, System 38, PC and bar-code imprinting devices.

Prices start at $11,000.

➤Tone Software
1735 S. Brookhurst
Anaheim, Calif. 92804
(714) 991-9460

NYCE insources

CONTINUED FROM PAGE 45

age NYCE's data center.

Rathgaber and Counter have built a staff of 50 programmers, client service representatives and telecommunications and operations support members.

With the data center migration completed, NYCE is busy working on other information systems projects. It is implementing a local-area network-based system designed to help its client service representatives log and track customer problems.

That project, which uses Novell, Inc. NetWare, is scheduled for completion in January.

NYCE also plans to link LANs in its four major offices in Buffalo and Albany, N.Y., and Hackensack and Secaucus, N.J., during the first quarter of 1993.

In Brief

CASE price cuts

Andersen Consulting halved the price of a starter program for Foundation for Cooperative Processing, a computer-aided software engineering (CASE) workbench designed to build client/server software. Starter Kit Plus, which goes for $49,500, includes eight weeks of training and support, and CASE tools and sample design objects.

KnowledgeWare GUI

KnowledgeWare, Inc. introduced Flashpoint, a graphical user interface (GUI) builder it purchased from **Language Technology, Inc.** about a year ago. Flashpoint, which is available immediately, was adjusted to work with KnowledgeWare's other application development tools. The GUI builder is priced at $50,000 until Dec. 28.

Multiplatform tester

Horizon Strategies, Inc. in Needham, Mass., announced Message Express/Tour, a developer's workbench for testing multiplatform programs. It was developed using the firm's Message Express middleware. While Message Express/Tour runs on IBM OS/2 systems, programs tested on the workbench can be implemented across all platforms supported by Message Express, the company said. Priced at $2,399, the product is available now.

Data conversion

Bachman Information Systems, Inc. plans to resell data migration tools from **Evolutionary Technologies, Inc.**, an Austin, Texas-based spinoff of **Microelectronics and Computer Technology Corp.** With a base price of $200,000, Extract Tool Suite includes Master Set, a suite of four tools that define source and target databases, and Data Conversion Tool, which then graphically maps data from the old to the new database, automatically converting the data, the firm said.

Software reuse not a panacea

Some firms pursue it as a development goal; others question its viability

By Garry Ray

■ Software reuse, this year's holy grail of application development, is attracting as much interest as ever. But developers and analysts said that its promise is being hindered by a web of issues such as training, costs, technical difficulties and psychological resistance.

"People need a reality check [on software reuse]," said Clive Lee, president of North Andover, Mass., training firm Semaphore. "They've read the hype, and they know it's not a panacea. Reuse requires an upfront investment."

Lee, whose company specializes in object-oriented programming techniques, agreed with many analysts, consultants and users who have seen both the promise and the dark side of the reuse equation.

Almost unanimously, they said reuse is an attractive and compelling goal for any development shop. In theory, software reuse is said to have the long-term effect of cutting development costs and speeding the rate at which applications can be designed, coded and delivered.

In the optimistic scenario, developers will write base application classes for inclusion in an organizational software library. Later, these classes will be recalled, extended or modified and added to new applications. "We can't afford to develop huge systems from scratch anymore," said Ed Evers, program manager at the Virginia Center of Excellence for Software Reuse and Technology Transfer (VCOE) in Herndon, Va.

VCOE recently released its Reuse Adoption Guidebook to the Defense Advanced Research Projects Agency, which funded the study.

Unfulfilled promises

But to those with a more skeptical outlook, the golden castle of reuse is nothing new. With each new development methodology, "there was always the promise of reuse," said Adrian Bowles, vice president and director of advanced software development at Westport, Conn., consulting firm New Science Associates, Inc. "Even proponents of structured design said you could reuse structured modules" of application code.

Nor will C++ programming — which is generally linked to object-oriented programming and software reuse — solve the problem. Lee said, "The syntax of C++ alone is not going to get people to their goal." Bowles said some C++ shops "are having the same problems that people are having with other languages." In and of itself, "C++ is of no real benefit" in writing reusable code, Bowles added.

Although reuse success stories have been rampant in the past year, some firms are perplexed about where reuse might be applied. A development manager at a Northeast insurance firm said reuse "sounds like a great idea, but we haven't been able to find a set of common things that everybody wants to do" with software components.

Others have made reuse a company mantra. At Microsoft Corp. in Redmond, Wash., "we don't have to convince management that software is in fact an asset," said Bob Atkinson, a software development engineer and architect of the company's Object Linking and Embedding technology.

"Developing from scratch would be a significant obstacle to doing the things we want to do," he added.

However, Atkinson said he is pessimistic about the cultural impediments to software reuse. Noting that developers must be taught that others will use their code, he said that "some very serious social structures have to be developed" to "reward you for doing something for someone else."

Bowles agreed. "It's simple psychology," he said. "You get more of what you reward, so you have to reward people for finding things and reusing them and also for putting things in" reuse libraries.

Impediments to reuse

Technical: Languages must enforce use of interfaces to reusable components. Applications must be designed for reuse from the start.

Business: Costs of training are high. The first project will not produce reusable code. Business logic and business rules are not generally reusable.

Cultural: Programmers must be rewarded for creating reusable modules. Management must think for the long term. Code must be considered a tangible asset.

DOD picks SoftBench for STARS project

By Kim S. Nash
PALO ALTO, CALIF.

The double whammy of recession and peacetime economy has shot holes through the defense industry, but one of the highest profile software development projects sponsored by the Department of Defense (DOD) continues — and keeps buying technology. Software Technology for Adaptable, Reliable Systems (STARS) recently adopted Hewlett-Packard Co.'s SoftBench framework as a software development guide.

STARS is a 4-year-old program funded by the U.S. Defense Advanced Research Projects Agency to help the government cut application development costs and speed up the process — goals that most civilian organizations say they are going after, too.

But what makes STARS different from other projects is its emphasis on "megaprogramming." This approach to software engineering puts reusability at a premium, but it is not necessarily focused on object-oriented techniques. More important is creating an environment that lets tools from various vendors work together and contribute data models, code and other parts of an application to a shared repository, according to Hans Polzer, program manager for STARS at Paramax Systems Corp.

"SoftBench gives us that freedom," Polzer said. Paramax is a subsidiary of Unisys Corp. and is leading the technology selection process for this project. Terms of the agreement were not disclosed.

SoftBench, which 100 systems and software makers support, lays out standards for application development products so they can work together, even if they were not built to do so. The framework does much of the translating and provides a common user interface. Tying tools together this way — rather than tightly integrating them with one another — gives users a bigger palette of options, Polzer explained.

HP's SoftBench is a market leader among several frameworks, including Sun Microsystems, Inc.'s ToolTalk and Atherton Technologies' BackPlane. HP recently signed up a reseller to handle overflow from direct sales. The framework is now available from Basis, Inc., an Emeryville, Calif.-based system integrator.

The $500,000 deal calls for Basis to sell HP's SoftBench 3.1 and the C++ version on Sun workstations and other Unix boxes as HP rolls out those versions. Basis is the first of several as-yet-unannounced third parties that will sell SoftBench and related products, an HP spokesman confirmed.

The Department of Defense is the largest software customer in the world, with spending for development and maintenance projected at $60 billion by 1993.

Software AG broadens OS/2 line

Tools geared for developing complex, high-volume host OLTP applications on workstations

By Gary H. Anthes
RESTON, VA

Software AG of North America, Inc. last week unveiled its core application development tools for OS/2.

The products are Adabas Server, the company's database management system; Entire Net-Work, a "middleware" product that facilitates development of applications distributed across heterogeneous environments; and Natural for OS/2, an enhanced release of the company's fourth-generation application development environment for OS/2.

The products are especially geared for developing complex, high-volume on-line transaction-processing applications for distributed databases, and they have the same functionality as their corresponding mainframe products, the company said.

Adabas Server is the first high-performance database management system to exploit OS/2 2.0's 32-bit capabilities, Software AG said.

> Software AG's OS/2-based development tools have the same functionality as corresponding mainframe products

It will support multiple data models including relational, entity-relationship and non-first formal, according to the company.

Adabas Server is written in C and is essentially the same software as was introduced earlier for Unix.

Entire Net-Work provides transparent communication between otherwise incompatible environments. It is a transport layer that supports multiple protocols and platforms with a common application programming interface (API).

In distributed applications, Entire Net-Work transparently intercepts API calls, translates them into the required format and then returns data back to the application regardless of where the program logic and the database are in the network.

Entire Net-Work for OS/2 supports Novell, Inc. SPX, NetBIOS and Systems Network Architecture (SNA) LU6.2. Support for Transmission Control Protocol/Internet Protocol and DECNet is in beta testing, Software AG said.

The new release of Natural for OS/2 supports a standard SQL implementation for data manipulation. Prices begin at $1,250 for a single-user development license and $300 for a single-user runtime license.

Adabas Server prices begin at $500 for a single-user license. Entire Net-Work for OS/2 is priced by node and begins at $300.

Separately last week, Software AG reported that Adabas — on a Unix-based Hewlett-Packard Co. HP 9000 Series 800 Model 150 uniprocessor system — had run at 303 transactions per second on the TPC-A benchmark, or 64% better than the comparable result reported by Oracle Corp.

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Integral Midrange has announced a new release of the Integral CASE Series.

The series is an integrated line of distribution, manufacturing and financial accounting software that uses computer-aided software engineering (CASE) tools. It is available in both traditional source code and CASE models.

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Application development

XOX Corp. has released Shapes, a geometric computing subsystem.

Shapes tools extend the C and LISP programming environments, offering a complete geometric computing capability. An assortment of data types as well as more than 175 operators specific to geometric computing are provided.

Within the space of any dimension, the product naturally models curves, mixed-dimensional and solid objects. Shapes has a dimensional independent cellular architecture and supports topology of mixed dimensional objects in manifold and non-manifold configurations.

Shapes' introductory price is $2,995.

➤*XOX*
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Lucid, Inc. has introduced Version 1.0 of XLT, a set of productivity tools.

The tools were designed for the Lucid Common LISP programming environment. An X Window System-based interface to data inspectors is provided, as are a stepper, a debugger and program and data analyzers. Other tools are also provided, including an interface to an editor called GNU Emacs.

According to the company, the system filters the information that it is presented faster than comparable products, simplifying a user's tasks.

The product is shipping with the Sun Microsystems, Inc. SPARC platform and compatible hardware, IBM's RISC System/6000, Digital Equipment Corp.'s DECsystem and the HP Series 700 from Hewlett-Packard Co.

XLT Version 1.0 costs $1,800.

➤*Lucid*
707 Laurel St.
Menlo Park, Calif. 94025
(415) 329-8400

ProtoView Development Corp. has joined with Borland International, Inc. to ship ProtoGen Pascal, an interface design and code generation tool for Borland Pascal with Objects 7.0.

Based on ProtoView's current ProtoGen computer-aided software engineering tool, the product enables Pascal DOS users to create Microsoft Corp. Windows applications by visually creating the user interface.

The Pascal Windows code is automatically written, and users can add their application-specific code to the framework that is generated, the company reported.

Features include a fully interactive menu designer and application designer, live test mode for animating the application interface and a regeneration facility.

The product costs $49.95.

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PUBLISH (wisely) or PERISH

By 1995, 50% of all office information will be in digital form, predictions say. Whether you departmentalize or centralize, finding the right electronic document strategy can help save you time and money

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ROUNDUP OF GROUP PUBLISHING PRODUCTS. **Page 53.**

RESOURCES. **Page 53.**

Fujisawa USA's Dale Carlson: *'It wasn't a crisis. But we had inefficient systems'*

By Robert M. Knight

Mention desktop publishing to the average information systems manager and you'll probably hear something like: "That's nickle-and-dime stuff. User departments handle it."

True, much computer-based publishing takes places in far-flung corners of corporations, away from the gaze of IS. And, yes, individual desktop-published pages can be cheaply and easily produced on desktop platforms and laser printers for only pennies a page.

But industry analysts say that for the average corporation, those nickels and dimes can add up to millions of dollars of virtually invisible spending a year.

The explosive surge in digital information, imaging systems and groupware and the rapid growth of network-based printing are only expected to worsen the situation during the next five years.

The bottom line, according to some experts, is that unless IS becomes more involved in corporate publishing, many organizations will find themselves facing expensive integration problems during the next few years.

Keith Davidson, director of Xplor International in Palos Verdes Estates, Calif., worries that many corporations are haphazardly adopting desktop or personal publishing functions, just as they did with PCs a decade earlier.

"We keep saying, 'It isn't going to happen again,' but it happens," says Davidson, whose 1,400-member association promotes effective use of electronic document systems.

No longer simple

Since the early 1980s, the typical corporate publishing environment has grown from a centralized operation to a relatively simple, departmental PC-based operation. In many organizations, an interlocking web of imaging systems, forms processing, multimedia, text management, hypertext and work-flow software is beginning to spread across the entire corporation (see chart page 53). Many such systems are based on networked or open platforms, further increasing the complexity.

Few would argue with the fact that desktop publishing has allowed more people to produce more better looking documents than ever before without the aid of typesetters, graphic designers, photo engravers and commercial printers.

Yet with so many new computer- and communications-based technologies being used to gather, hold and produce information, experts warn it's naive at best — and dangerous at worst — to believe that document management and publishing is not an IS function.

"If your corporation moves information, your corporation is a publisher," writes Russell Lipton in *The Multimedia Toolkit* (Random House, Inc.), a new book that includes software development as a publishing activity. Lipton notes that many companies are struggling to construct new architectures that will permit interactive, on-line handling of information.

"Recognizing that, broadly, your business is the business of publishing is the first step toward making over your business in the '90s," Lipton concludes. "Conducting your publishing activities in the dark is foolish."

Yet experts say several major obstacles prevent corporate publishing from being a burning issue for IS — or even an issue at all, for that matter.

"Some people don't know they even have a publishing problem," says James Popkin, program director of office IS at Gartner Group, Inc. in Stamford, Conn.

Too bad. Popkin says, because networked copy is rapidly replacing paper as an end product. More importantly, by 1995

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Publish (wisely) or perish

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the amount of office information in digital form will double, from 25% to 50%, he says, thanks to the growth of local-area networks and more powerful desktop machines.

"[Companies] have trouble today managing 25%," he says. "If that doubles without the benefit of powerful documentation tools, [they] won't be able to handle it."

How much spent?

An even more basic problem, accordiag to Ronald Mallett, chief executive officer of Graystone Cos., a Waterbury, Conn., supplier of digitization services, is that few companies have any idea how much desktop and electronic publishing costs their organizations.

"I'll wager a full week's consulting fee that no CEO of any company over 1,000 employees can tell you within 50% accuracy just how much his company spends on publishing activities," Mallett says. "Nor can they tell you how many people are involved, since middle managers tend to hide them under misleading job descriptions."

Mallett says he once worked for a corporate lab director who hid an entire speech-writing and publicity department in his customer engineering and support group.

Another problem stems from the nature of corporate publishing, consultants say, and the surprising importance some business units attach to it. "Department heads develop a fanatical attachment to their publications," Mallett says, "since these often represent the only hard proof of the department's productivity and corporate worth. Companies often overproduce, duplicate, replicate and even contradict themselves in a digital paperwork blizzard."

Companies that think about publishing at all tend to focus more on small, product-oriented issues, says Mark Walter, senior editor of the "Seybold Report on Publishing Systems," a newsletter published in Media, Pa.

"I don't talk with a lot of people who say, 'I'm trying to get a handle on my publishing.'" Walter says. "I find myself talking with people who are looking at the tools they use and the next tools they are going to use. They want to save time. They want to save money. They ask, 'How can we improve our system?'"

> One electronic publishing standard you'll be hearing about is Standard General Markup Language which gives documents an open architecture

To remedy these problems, some organizations and consultancies have tried to promote the idea of developing a corporate publishing strategy to set up guidelines for integrated publishing activities.

It's difficult, however, to formulate general guidelines and principles that apply equally well to different organizations. A centralized approach and strict corporate publishing strategy that is ideal for one company, for example, could very well be disastrous for another, even in the same field.

Predictably, organizations have tended to gravitate toward a wide range of strategies that make sense for their specific business climate and needs. Some require heavy IS control and scrutiny; others leave the task entirely to user departments.

Some companies, such as Allen-Bradley Co., are centralizing all publication functions in IS (see story page 53).

Critics note that too much centralized control can stifle the creativity that goes into producing a departmental document. Xplor's Davidson, for one, discourages thinking of centralization as the only choice.

"The secret is to balance the cost control and the structure that you get from a centralized structure with the flexibility and responsiveness that you get from a localized operation," he says.

It's also necessary to weigh issues of accessibility to databases or document storage devices against security issues.

Some corporations are outsourcing all publishing activities. Short of that, Gartner's Popkin has a couple of other alternatives.

"You can put together your own request for information to vendors outlining what the problem is and the applications you're looking for," Popkin says. "You'll get a variety of approaches that way. Or you can call one of the Big Six consulting firms or a technical consulting firm that specializes in document management or publishing."

Davidson recommends adopting a corporate document policy. "This policy needs to address, to establish some consistency of output so the corporate image and reputation is protected. It needs in some way to get some compatibility among the company's various systems or platforms or at least describe the conditions in which people may vary from them."

Knight is a free-lance writer based in Chicago.

User voices

Jeff Newman, assistant vice president, Barclays Bank PLC, New York
"Our policy on desktop publishing packages is the same as it would be for any other horizontal application, such as a spreadsheet — it's a free-for-all. Users can use any application they choose, but there's not a lot of desktop publishing packages going on. We mostly use [Microsoft] Word for our desktop needs, and it does a good job. For most needs, to learn a desktop publishing package, you have to be crazy."

Scott Stein, director, store automation, Dairy Mart Convenience Stores, Inc., Enfield, Conn.
"In retail, the focus is on bringing products in that have an impact on operations. It takes a little longer for a corporate desktop strategy to become real. We've kind of avoided it a little by using facilities within WordPerfect — it's [a] very generic desktop, so we haven't really made a jump."

Deb Leone, supervisor, technical communications, Waukesha Engine Division, Dresser Industries, Inc., Waukesha, Wis.
"We are a kind of stand-alone entity here, as far as desktop publishing. We do have an in-house print group, which has [Aldus Corp.'s] PageMaker, and if departments need something, they have the print group make it up for them. But there's no such animal as a corporate desktop [publishing] strategy."

Fujisawa: Re-engineer, then streamline

Few industries consider corporate publishing more crucial than does the pharmaceutical industry, where documents require more production than pills do.

In fact, producing documents takes up an estimated 70% of work time at Fujisawa USA.

The Deerfield, Ill., subsidiary of a Japanese conglomerate dispenses generic prescription drugs through its Lyphomed Division. Its FPC Division manufactures brand-name prescription, or "ethical," drugs.

> We needed to streamline, replace redundant systems [and] automate manual systems
> Dale Carlson, Fujisawa USA

To keep up with the blizzard volume, the unit decided to focus product and paper from both divisions in the office of Dale Carlson, corporate quality assurance manager, and not with information systems.

The right approach

Fujisawa's approach stems from looking first at the business challenge — re-engineering — and then automating appropriate documentation processes.

Carlson and his staff track 1,000 to 2,000 pages of documentation for the Federal Drug Administration (FDA) each time Lyphomed makes a bid for an ethical drug to become generic.

Over a period that typically lasts at least seven years, FPC amasses about 100,000 pages to document each drug it wants the FDA to approve. And the paperwork doesn't stop there.

"After the product is approved, the documentation still has to be maintained," Carlson explains. The FDA can examine and investigate documents at any time to make sure the product is manufactured according to guidelines set up in the original application.

As a result, Carlson's staff must maintain its fat files on each approved product, and each year it must submit a report to the FDA that discusses any changes in manufacturing, procedures, raw material or clinical testing.

By late 1991, it became obvious that products and paper were bursting beyond Fujisawa's PCs and local-area networks, Carlson recalls. IBM Application System/400 computers support the LANs, which operate in corporate facilities in Deerfield and Melrose Park, Ill., and in manufacturing plants in Grand Island, N.Y., Canovanes, Puerto Rico, and Illinois.

"It wasn't a crisis," Carlson explains. "But we had inefficient systems. To support continued growth, we needed to streamline, replace redundant systems, automate manual systems and generally just get a better handle on all of our documentation needs."

Calling in the reserves

Company officials decided to get outside help and called in A. T. Kearney, Inc., a Chicago-based consulting firm. Last January, teams began a structured process to assess how people handled documentation. They interviewed employees at virtually every level of every functional unit to get a first-hand look about needs and concerns. From that needs assessment, Fujisawa and Kearney concluded the company needed an integrated documentation system that would be accessible to all, from development to manufacturing.

By next spring, Fujisawa expects to have re-engineered and streamlined its entire business process and cleaned up the manual systems — all before there is any attempt to automate the document process. Carlson sees input from IS, documentation and manufacturing as key to the process.

In the meantime, Dale Carlson and his staff are anxious to know what configuration of which software and hardware components will result from the yearlong look they have taken at their document management.

But they can wait, says Carlson, adding it makes sense to wait until components are in place first. He says he's not sorry that the company is taking the time to consult a wide range of employees and gain top management commitment. In typical Japanese business style, the company is prepared to go through the needed steps without rushing.

"It's important to answer short term questions as well as providing long-term benefits," Carlson says.

— Robert M. Knight

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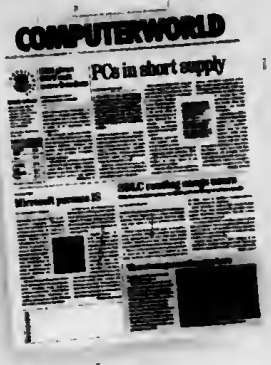

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- 65. Computer/Peripheral Dealer/Distr./Retailer
- 99. Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/Asst. VP IS/ MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 23. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt., LAN Mgr., PC Mgr.
- 23. Dir./Mgr. Sys. Development, Sys. Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Mgt.
- 65. Sys. Integrators/ VARs/Consulting Mgt.

CORPORATE MANAGEMENT
- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. VP
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
- 80. Educator, Journalists, Librarians, Students
- 99. Other Titled Personnel

3. Does your job function require involvement with your company's or your client's computer/ information systems/data processing/ communications systems? (Please check only one)

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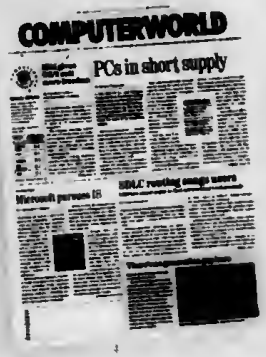

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- 55. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/ Transportation
- 70. Mining/Construction/Petroleum/Refining/Agric.
- 60. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 65. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 65. Computer/Peripheral Dealer/Distr./Retailer
- 99. Other _____ (Please specify)

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Resources

As technologies continue to evolve and overlap, it's tougher than ever to keep up. Following are some resources that can help you track the big picture as well as individual parts.

- Association for Information And Image Management. (301) 587-8202.
- "Document Management Technology," monthly newsletter. (602) 585-4254.
- "Seybold Report on Desktop Publishing" and "Seybold Report on Publishing Systems," monthly newsletters. (215) 565-2480.
- Xplor International, 1,400 members. (310) 373-3633.
- *Publish*, monthly magazine. (415) 243-0600.

New technologies and the need for corporatewide use of on-line data has created a hugely complex and multifaceted document management challenge for IS managers in the 1990s

Source: New Science Associates, Inc.

CW Chart: Stephane Faucher

AT&T: People key to smooth operations

Technology secondary to discipline

For AT&T's Proposal Center in Greensboro, N.C., the biggest corporate publishing challenge isn't technical. It's educating internal clients to avoid missed deadlines and last-minute changes, according to Jean Omisore, network manager at AT&T Federal Systems Advanced Technologies.

The company aims so much of its work at the U.S. government that it has an entire unit dedicated to responding to federal requests for proposals.

"We have to work under really tight deadlines, and the publishing end of the proposal is the very last stage of the process," Omisore explains. "Since it seems like everybody else has missed deadlines, that means that change control — version control — is critical."

Special software helps

To help manage the process for the publication of an estimated 40,000 pages per year, the Proposal Center acquired Configuration Management Systems (CMS) workstation software from WorkGroup Technologies, Inc. in Waltham, Mass.

The CMS database captures all information about a file or proposal. It then stores information about all files so "we don't have to reinvent the wheel every time," Omisore says. "There isn't much that is reusable because each proposal is unique, but sometimes we can produce boilerplate formats."

> Since it seems like everybody else has missed deadlines that means that change control version control critical
> Jean Omisore network manager

The biggest problem, she says, is that customers are used to revising during the entire proposal cycle, which lasts from three weeks to three months. And not just for text. "Some proposals may have 300 to 400 drawings — full-page illustrations — and we get 10 revisions per graphic on average," Omisore says. "The CMS system allows us to collect information on how many revisions were asked for so if the customer asks, 'Why was this so expensive?' you can say, 'It's because you asked for 10 revisions on every page.'"

The education process is taking effect, she says. "When you present the customer with facts and can tell them, 'This expense is at your end, not our end,' it makes a difference. It's made a big impact on several of our proposal writers." — *Robert M. Knight*

Allen-Bradley pushes unity in publishing

Centralized approach to publishing helps company to present unified appearance

At Allen-Bradley Co.'s Automation Group, Tim Daunch and his department have the first and last word on corporate publishing.

"We handle all things that happen regarding publications," explains Daunch, information integration systems manager at the Highland Heights, Ohio, division. Milwaukee-based Allen-Bradley makes various line hardware and software products.

That means the 50-person department is in charge of all overseas literature, CD-ROM and downloading information to internal and commercial printers as far away as Europe. The department can drop-ship product information — programming manuals, user manuals, installation manuals, marketing literature — to any location in Europe from a high-speed printer in Kildare, Ireland, within 24 hours.

The staff revises and updates product documents and compiles and catalogs them quarterly on Apple Computer, Inc. Macintosh computers, sending the updates to subscription customers on CD-ROM.

The index of available documents alone covers 90 pages — each displaying about 20 line items. They represent an estimated 70,000 pages of product information.

For the records

Using RDM, a code management archival tool from Waltham, Mass.-based Interleaf, Inc., Daunch and his staff developed a "job jacket" format for every Automation Group product.

Each jacket, an electronic file that takes the place of piles of paper, includes not only manuals but also product changes, review copies, correspondence, engineering specifications, graphics — anything that anyone mapping a paper trail would want.

RDM indexes and cross-references each item, "which otherwise might be in a cardboard box somewhere," Daunch says.

For anyone wanting to initiate an electronic document management system, Daunch offers one recommendation: "Standards, standards, standards.

"We found that our partners in Milwaukee had developed their own templates," Daunch says. "They achieved the same look but in different ways. We had totally different instructions on how to lay out margins or graphics or headers or type fonts. What we called a 'header' they called a 'head' and others called a 'starter.'

"Larger companies tend to have different writing groups for different product lines or divisions, and they all have their own way of doing things," he concludes. "If a company wants to present a unified appearance, all the information should be presented as if they came from a unified group of documents." — *Robert M. Knight*

Product update

Group publishing products continue to be a hot market.

Agfa Compugraphic's CAPS Division announced an object-oriented shared document management system for **Sun Microsystems, Inc.**'s SPARCstations.

Among other new workgroup publishing systems are Page Director 2.5 ($1,495) from **Managing Editor Software**; ODMS ($1,500) from **Odesta Corp.**; The CopyFlow Family ($625 to $1,840) from **North Atlantic Publishing Systems**; and QuarkCopyDesk and QuarkDispatch ($2,790 for both) from **Quark Corp.**

XSoft, a Palo Alto, Calif.-based division of Xerox Corp., introduced a suite of document management and publishing software, aimed at workstation and Unix-based publishing operations.

Separately, **Xerox Imaging Systems, Inc.** in Peabody, Mass., announced a client/server version of its Unix-based ScanWorx Intelligent Character Recognition Software for workstations. The product ($1,995) converts hard-copy documents to industry-standard formats, such as **Interleaf, Inc.** and **WordPerfect Corp.**

Digital Equipment Corp. announced a 32-page-per-minute network laser printer and software. DEC said the PrintServer 32 is ideally suited for complex print jobs that include graphics and multifont text. List price is $23,900.

Outsourcers: Get close but not too close

By Paul Gillin
BOSTON

Outsourcing has entered a new era characterized by cooperation and strategic partnering between users and vendors. But information systems executives are being cautioned not to get too chummy with their new allies.

Speakers and attendees at Digital Consulting, Inc.'s Outsourcing Conference recently agreed that interest in outsourcing is surging as corporations look to strategically farm out pieces of their operations, an approach called selective outsourcing.

"In the last year, the number of questions I've received on outsourcing has doubled if not tripled," said Rita Terdiman, a program director at Gartner Group, Inc. in Stamford, Conn. Chief information officers are now worrying less about losing their jobs to outsourcers and more about managing those relationships as a contractor overseeing a subcontractor.

However, there were plenty of caveats from speakers and attendees, who advised users to manage their outsourcing partners carefully and write extremely detailed contracts before opening their data center doors to outsiders.

"Good legal counsel will save you a lot of aggravation," said Robert Rough, chief financial officer at Harvest Foods, Inc. in Little Rock, Ark.

Us or them?

Outsourcing should be viewed as a strategic tool for IS to employ as the job of managing expanding corporate networks becomes too big for one department to handle, said Dale Kutnick, president of Meta Group, Inc. in Westport, Conn.

"If you have a lot of drudge work, outsourcing is an alternative," he said, citing as one example the manpower-intensive job of maintaining legacy mainframes. "Do you need MVS experts in-house or should you contract that out to IBM?" he asked. "After all, it's their software."

Kutnick attributed new interest in selective outsourcing to the "shattering of the data center" as networks, databases and application development move out of the glasshouse and into the user community.

He said future IS groups will increasingly find themselves competing with and managing contractors who handle everything from local-area network maintenance to application programming. "While the user may make the outsourcing decision, the IS group must manage the outsourcer," he said.

Users said they agree that outsourcing works best when it is a partnership but also emphasized that good fences make good neighbors.

Harvest Foods outsourced its entire 26-person IS operation to IBM's Integrated Systems Solutions Corp. six months ago and has reaped big benefits, including faster response to system problems and quicker deployment of new systems. Contract negotiations took three months, including a lot of haggling over details. "You have to decide who's going to pay for the staples," Rough said. "It's that detailed."

Other users agreed that despite a newfound spirit of cooperation, outsourcers have to be carefully managed and contracts painfully hammered out.

"We've had about 10 issues come up in the last year that required additional memos of understanding" with the outsourcing vendor, said Peter Wyman, senior vice president of support and services at California Federal Bank in Los Angeles. Cal Fed outsourced its data center to Systematics Corp. last year.

Wyman advised users to ensure that the outsourcer deal directly with the IS department. "Vendors may try end runs to your board or executive management. You want to make sure there are penalties for that kind of thing," he said. At Cal Fed one person is responsible for monitoring Systematics' compliance with the outsourcing contract. "It's helpful to have someone there who [illegible] by making sure the relationship is good," he said.

Users also had their doubts about selective outsourcing, which they said can lead to finger-pointing and confusion as managers try to coordinate the activity of multiple outsourcing vendors.

Speaking for a panel of three outsourcing users at the conference, Rough said, "None of us would go [with selective outsourcing]. We want to make one phone call, not be the referee over who's at fault."

Cost-saving illusions

While most outsourcing deals are still done to save money, experts warn that the cost benefits can be illusory.

The fixed-price contract "is not real," said Rita Terdiman, a program director at Gartner Group. "There are indexed prices, pass-through services like telecommunications costs and even state taxes and incremental charges above the baseline."

Such add-on charges can dramatically increase the price of a contract but are rarely given much heed in negotiations, she said. "Outsourcing vendors would like to rush you through contract negotiations."

In contrast, internal IS departments can often compete successfully against outsourcers, particularly in large companies. Cost benefits are illusory because the outsourcer has to make a 15% profit on the contract.

As a result, "the average outsourcer has to charge you 30% over the cost of their service," says Dale Kutnick, president of Meta Group. Terdiman estimated vendor overhead to be roughly 40% and urged users to put together a competitive bid. — *Paul Gillin*

Executive Track

Mark T. Hogan, 41, formerly executive director of North American operations planning and corporate information management at **General Motors Corp.**, has been appointed president and managing director of **General Motors do Brasil, SA**. He succeeds **G. Richard Wagoner Jr.**, 39, who has been named executive vice president and chief financial officer at GM.

Herbert Moeller, formerly vice president of corporate information technology at **Gillette Corp.**, has been promoted to vice president of finance at the Boston-based company's North Atlantic division. Newly installed at Moeller's former post is **Patrick Zilvitis**.

Georgia-Pacific Corp. has named 25-year information systems veteran **Carl Wilson** to head its IS operations as vice president of information resources. Wilson joined the Atlanta-based firm from **Grand Metropolitan PLC, Pillsbury Co.** where he has served since 1984, most recently as senior vice president of IS.

Nicholas D'Agostino III, 30, is the new vice president of management information systems, design and construction at **D'Agostino Supermarkets, Inc.** in New Rochelle, N.Y. D'Agostino formerly served as the firm's corporate director of systems.

Bethpage, N.Y.-based **Grumman Corp.** has a new senior vice president of strategic and technology planning: **Jacob Bussolini**, 56. Bussolini formerly served the aerospace and information services firm as vice president of strategic planning.

In Stuart, Fla., **Robert L. Kay** is newly in office as director of information systems at the **Martin County Board of Commissioners**. Kay, who pioneered a similar position for the city of San Antonio in 1981, replaces **Victor Ferreros**, who is now IS director at the **Palm Beach County Board of Commissioners** in Palm Beach, Fla.

Calendar

JAN. 10 - JAN. 16

Software User Documentation: Designing for Usability. Orlando, Fla., Jan. 11-12 — Contact: Digital Equipment Corp., Marlboro, Mass. (508) 467-6910.

Electric West '93. San Diego, Jan. 12-14 — Contact: The Fairfield Factor, Inc., Brookfield, Conn. (203) 775-0422.

Redundant Arrays of Inexpensive Disks Advisory Board Meeting. Sunnyvale, Calif., Jan. 13 — Contact: Joe Molina, Technology Forums, Lino Lakes, Minn. (612) 704-2379.

JAN. 17 - JAN. 23

Retailing 1993: A Turning Point. New York, Jan. 17-20 — Contact: Retail Services Division, New York, N.Y. (212) 244-8780.

The Canadian Software Re-engineering and Maintenance Conference. Toronto, Jan. 19-21 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3870.

Outsourcing Conference '93. Dallas, Jan. 22-23 — Contact: Frost & Sullivan International, New York, N.Y. (212) 233-1080.

JAN. 24 - JAN. 30

Marketing the IS Organization Internally. Atlanta, Jan. 26-27 — Contact: Oullette & Associates Consulting, Inc., Bedford, N.H. (603) 623-7373.

JAN. 31 - FEB. 6

Downsizing Corporate Information Systems Conference. London, Feb. 1-2 — Contact: Amanda Stuart, IBC Technical Services Ltd., London, England 011-071-637-4383.

Object World. Boston, Feb. 1-4 — Contact: Lyna Fullerton, World Expo Corp., Framingham, Mass. (508) 879-6700.

Image World West. San Jose, Calif., Feb. 1-5 — Contact: Benita Roumanis, Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 328-9157.

Comnet. Washington, D.C., Feb. 2-4 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

FEB. 7 - FEB. 13

1993 User Data Management Systems User Conference. Keystone, Colo., Feb. 7-10 — Contact: Rebecca Campbell, Interactive Software, Keystone, Colo. (303) 987-1001.

Managing Enterprise Networks Conference. San Francisco, Feb. 8-10 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3870.

For technology-dependent U.S. companies, operating in the former country of East Germany is

BUSINESS AS (un)USUAL

Steve Rushmore

By Liselotte H. Davis

"During the formative months after the Wall came down," says one Chrysler Automotive Services GmbH employee working in the former East Germany, "trying to reach the home office [in the U.S.] for decisions was difficult." To say the least: Chrysler had no direct dialing for international calls, instead having to register calls with an operator and wait for them to go through, which could take up to eight hours.

Furthermore, poor line quality rendered faxes all but useless. "You used portable phones and operated the office out of the back of a car," the Chrysler staff member says.

At General Motors Corp.'s Adam Opel AG auto factory in Eisenach, Germany, electrical outages have repeatedly shut down computer-controlled chassis assembly line robots, disrupting production.

Stories like these have come in from U.S. companies doing business in the former German Democratic Republic (GDR), which was reunified with the west on Oct. 3, 1990. They have experienced overburdened phone lines, telecommunications network difficulties, disrupted power and other infrastructure and utility problems that have wreaked havoc on voice and data processing. Such problems are the legacy of East Germany's 40 years of Communist rule and a basic infrastructure built in the 1930s.

So why do U.S. corporations such as Chrysler Corp., GM, The Coca-Cola Co., R. J. Reynolds Tobacco Co. and Otis Elevator, Inc. continue to set up branches in the former GDR, and why do their information systems managers cope with the headaches?

Because the advantages of accessing Germany's market of 16 million consumers (not to mention the European Community's megamarket of 377 million consumers) may outweigh the difficulties. The German government, whose objective is to rebuild eastern Germany, is offering substantial investment allowances and incentives to attract and assist investors.

At least 35 U.S. firms have decided to put in stakes in eastern Germany, investing approximately $1.7 billion to purchase existing sites or to set up joint ventures in the country, according to September 1992 figures published by Treuhandanstalt, an organization in charge of privatizing all formerly state-owned enterprises. Dozens more have set up business without Treuhandanstalt's involvement.

Some U.S. companies are already seeing a return on their investment. Sales at Otis Elevator's East German operations increased by 15% in 1991. Sales at R. J. Reynolds Tobacco

Former East Germany, *page 56*

Davis recently returned from a year in Germany as a Fulbright Fellow. She is currently a technology management consultant in Baltimore.

Going overboard

East German firms have had their own share of system headaches after reunification. A number of large East German firms, thrilled to finally gain legal access to embargoed Western technology, made inappropriate hardware and software purchases, buying large mainframes and expensive modularized financial application systems. These purchases were inappropriate because they were based on the size of the company at the time the embargo laws changed. Most companies have since downsized and restructured and now have more computer capacity than they need or can afford.

Continued from page 55

GmbH jumped by 19% that same year. Coca-Cola GmbH expects to reach sales of $1 billion in eastern Germany by 1993. GM's Adam Opel has sold more than 130,000 cars there to date.

Because of the unique business climate in the former GDR, however, many of these companies have had to come up with workarounds to ensure smooth operations. But things are slowly getting better; the country is updating its telecom network and infrastructure, companies are going for downsized systems in a big way, and there is a lot of talent in the IS ranks.

Here's what an IS manager in the former GDR must deal with:

The telecom situation

Imagine what it would mean for a company in the U.S. not to be able to get a phone connection for three months. Imagine having to adjust fax machines to transmit at 50% of normal speed or risk garbled and unreadable data.

Welcome to the former East Germany, with a backlog in 1989 of 1.2 million applications for phone service and where three-month phone setup time is currently the norm.

The former GDR's telecom infrastructure harkens back to World War II, after which the Communists severed phone connections to the West. In fact, in 1989, almost 70% of the existing network was based on switch mechanical technology developed in the 1920s. Network capacity was poor; the switch was tied up not only for setting up the call but also for the duration of the call. Furthermore, the copper lines — 60-plus years old — were corroding.

Sufficient, dependable telecom service is still unavailable everywhere in eastern Germany, even though an initiative is under way to revamp the telecom network by 1995. Called Telekom 2000 and approved in May 1989, the idea is to replace copper cable with fiber-optic, expand network capacity and make available Integrated Services Digital Network capabilities (see story page 58).

Because of the current limited number of lines, U.S. companies have had to work around the overburdened system, including using delivery services, to move their information. Nascent cellular networks and satellite systems in eastern Germany promise other ways of bypassing the outdated phone network.

R. J. Reynolds Tobacco GmbH and Coca-Cola GmbH, for instance, used couriers to carry documents and disks from east to west instead of faxing, transmitting or even using the phone to exchange information. In fact, through July 1991, Coca-Cola GmbH spent approximately $50,000 on couriers to send disks and financial information to its central processing site in Essen or one of its other 15 branch offices in Germany. At the time, it had a total of only 12 ingoing and outgoing lines from Berlin (it now has 60) to deal with its 5,000 to 7,000 customers.

Adam Opel AG "employees drove hours over the [former] border to reach a [western German] telephone" because of limited international lines in the east, according to a spokesman for GM's German subsidiary.

To deal with the limited number of lines between eastern and western Germany, Adam Opel used its own operators to route calls from Eisenach in the east through Zurich to Russelheim in the west.

Mode of choice

Portable phones have become the workaround of choice for many companies, so much so that most list their portables' phone numbers in the telephone directory.

At Otis Elevator GmbH, for instance, it was not unusual, in the months after reunification, for employees to make as many as 50 unsuccessful attempts to reach a potential customer or business partner. Assuming that customers were having as much trouble reaching it, Otis provided portable phones to employees to supplement the office telephone network.

In this way, it could reach its maintenance workers on the road, it could ensure the availability of its 24-hour service line, and it could enable communications among employees in the same building.

Because of the large number of firms using portable phones, the current analog-based network, C-NETZ (which was "imported" from western Germany) has nearly reached its capacity of 600,000 users. In fact, users are starting to experience some of the same problems that drove them to portable phones in the first place; during peak hours (weekdays from 8 a.m. to 6 p.m.), C-NETZ users have to wait to make a call.

To alleviate the situation, Telekom, the German Post Office's telecommunications division, which oversees C-NETZ as well as the regular phone system, is expanding the network to 800,000 participants by the end of 1993.

However, for U.S. companies looking for easier access, better line quality and an international reach, the advent of digital cellular systems in the former GDR holds more promise.

Two new digital, wideband networks — D1-NETZ and D2 Privat — will likely provide more reliable connections, increased capacity and better transmission quality than C-NETZ. The equipment is also less expensive — although still very high by U.S. standards. Prices for *each* mobile phone, including setup, range from $1,415 to $2,625 for cellular vs. $2,500 to $4,375 for analog. The new networks also adhere to the Global System of Mobile Communication standards, which enable portable phone use throughout Europe.

Most of the current C-NETZ customers say they intend to upgrade to the digital networks as soon as the systems provide complete area coverage. Currently, D1-NETZ provides roughly 60% area coverage for 80% of the people. By the end of 1993, it will have 92% area coverage for 97% of the people.

New portable telephones allowing for data transmission are expected to be available in 1993, further expanding services to include file transfer and fax transmission.

Costly but consistent

Certain U.S. firms, such as Coca-Cola GmbH and Citibank AG, have opted for satellite systems to ensure consistency in data and voice transmission quality and service, though this tends to be an expensive alternative to the regular phone network. Coca-Cola GmbH spent about $125,000 to install its satellite system to transmit financial information to its main office in Essen.

Aside from the cost of installing transmission equipment, usage charges are high. The charges for the Telekom's VSAT David satellite network depend on transmission capacity and the number of client stations. For example, the monthly charge for a client that has 50 stations in Europe is approximately $47,500 for 9.6K bit/sec. speed and $85,000 for 64K bit/sec. speed. Telekom's point-to-point satellite connection, FVSAT, costs approximately $8,440 per month for 64K bit/sec. and $13,125 for 128K bit/sec.

Citibank AG estimates that the need to use satellites within the former East Germany increased its

Former East Germany, *page 58*

The new Germany

☐ The former German Democratic Republic
■ The former German Federal Republic

User profile

German users have a positive attitude toward learning new technology, with about 50% of them experienced in using computers, according to Mr. Roesser, an IS manager at Coca-Cola GmbH.

It could be (and was) worse

Before unification, environments were a hodgepodge

If you think IS departments have it hard today in the former GDR, think again. During the Communist era, systems environments were a mishmash of systems that German companies had to figure out how to integrate.

Before reunification, East Germany operated under a centrally planned economy. The typical East German firm (Kombinat or industrial group) was heavily focused on production and research and development. Because obtaining raw materials could be difficult, companies developed substitutions without regard to cost or time. Bringing products to market could take up to 10 or 15 years.

During this time, the primary hardware manufacturer was Robotron, a large Kombinat comprised of at least 20 different companies. System components were manufactured in different East bloc countries. The result was a hodgepodge of equipment from different countries such as Hungary, Yugoslavia or the former Soviet Union. The products were typically unreliable. In fact, after installation, units were left open so that staff members could easily access faulty components.

Before reunification, the systems environment consisted of a mix of architectures from the 1960s, '70s and '80s: VM knockoffs running on IBM 370-type machines with a few Intel Corp. 8086 PC knockoffs in the background. For instance, in 1985 Robotron produced an IBM 370 equivalent that became popular because it had the IBM documentation.

Robotron also created a minicomputer in 1989 that it patterned after the Digital Equipment Corp. VAX 11/780. While considered "modern" by East German standards, the VAX clone was based on a U.S. machine DEC stopped making in 1982.

From another Kombinat came the P 8000 minicomputer, which ran Unix, according to Bernd Michael Paschke, data processing manager at the Institut fuer Krankenhaushygiene at the Charite — Humboldt Universitaet.

Western computers were scarce because East Germany was under a technology embargo as a Communist country. Even though Robotron produced 10,000 machines a year, many were traded or sold to other Communist countries.

Companies had no logical systems procurement plan; they took what they could get. Because of this haphazard planning and mix of foreign systems, technical people became very adept at jury-rigging computer connections.

Despite the embargo, however, some East German firms and government agencies got Western technology illegally. Favorite targets included DEC VAX or IBM machines. Units almost always came without the accompanying user manual. Beautifully bound copies of scarce documentation still exist in the former GDR. •

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Continued from page 56

telecommunications costs by as much as 500%.

But for most firms, this is the cost of doing business in what could turn out to be a lucrative market.

The systems story

Because of telecom infrastructure problems and the high cost of space and building renovations, most U.S. firms in the former GDR tend to set up small branch offices that do little or no central processing. The typical systems function is data entry, with central processing handled by a major division in West Germany or another part of Europe. The central processing site would typically send information on to the U.S.

In many instances, companies have in place redundant manual procedures in case something goes wrong. Because their primary function is to access and transmit data, the eastern German sites are the essence of downsized operations — 386-based PCs running Microsoft Corp.'s Windows and combined into PC networks, typically from Novell, Inc.

Oftentimes, the microcomputer networks are coupled with midrange computers such as IBM's Application System/400. For instance, Adam Opel AG has a minicomputer to convert data that its dealers transmit via PC networks (some bigger dealers use minicomputers). Adam Opel's minicomputer then uploads the information to the company's mainframe in Russelheim in the west.

The emphasis for U.S. companies in the former GDR is low cost and ease of use so they can move quickly and cheaply into the emerging market; PCs are easier to bring on-line than bigger machines. To reduce expenditures and training time further, many U.S. companies bring over their in-house applications software. This also ensures worldwide standardization.

More talkative

In 1989, the number of telephones in East Germany was 11 per 100 people; in the U.S., that ratio was 51 to 100. The German ratio is likely to get better. During 1991, Telekom installed in eastern Germany 555,252 telephone connections, including 152,903 for business customers. It set up 11,824 public telephones and 6,326 new data connections. More than 600,000 telephone connections will be installed in 1992, and 800,000 are planned for 1993.

These lean, mean and modern operations, however, are a recent phenomenon. U.S. companies that took over existing firms, for instance, found few computer systems in place. Where systems did exist, they were outdated, incompatible or not cost-efficient (see story page 56).

Restrictions on technology imports to the former Communist country kept state-of-the-art systems from making their way east until reunification in October 1990.

For instance, Otis GmbH, which inked 13 partnerships with existing elevator maintenance firms in the East, found almost no computers in use at its sites. Even the typewriters dated from before World War II. Otis has since brought over equipment from West Germany, including PCs, copiers and typewriters.

Before restrictions were lifted, Coca-Cola GmbH's East German facilities were outfitted with IBM System/36-type machines. By 1991, changes were happening quickly. The company put an AS/400 into its main office in what had formerly been East Germany. During a six-month period in 1992, the IS staff converted 15 branch offices to either AS/400s or intelligent controllers. The voice and data communications system was a mix of satellites, portable phones and fiber-optic cable. Laying the cable had to be arranged through a private contractor.

Today, GM, which is one of the largest investors in the former GDR, has several hundred PCs, tied into a local-area network, at its Adam Opel GmbH factory in Eisenach.

The lowdown on staff

IS staff members in German divisions of U.S. companies are almost exclusively German-speaking. According to U.S. companies, systems people are knowledgeable and highly motivated, but they do require a lot of training.

IS staffers also tend to be integration specialists; more often than not they've had to tie together a hodgepodge of equipment from countries such as Hungary, Yugoslavia or the former Soviet Union. According to IBM, which has sites in the country, East German workers know the nuts and bolts of hardware and software better than their western German counterparts.

Where the Germans are lacking is on the "soft side" of systems knowledge — project management and system development methodologies, especially requirements definition and analysis, according to Coca-Cola GmbH managers. U.S. companies must provide guidance in strategic planning and management.

For some workers, English courses may be necessary so that they can work on in-house software developed in the U.S. and written with English commands. U.S. companies in the former GDR say they do a lot of on-the-job training. A common practice is to bring in experienced employees to help with the initial setup and conduct intensive in-house courses to familiarize employees with technology and procedures. Otis Elevator GmbH, for instance, has a two-person help desk staff in West Germany to answer inquiries and go on-site in the east if needed.

All this training is expensive. However, the investment is partially offset by the current wage differential. East German workers earn approximately 60% to 70% of what their western German counterparts earn.

.....

Setting up a business in East Germany is certainly not a breeze. It requires time, patience, a sense of humor, innovative solutions to the challenges encountered and the willingness to invest for the long term.

U.S. companies must be patient while the Germans rebuild the necessary infrastructure and while the German work force familiarizes itself with new technology and concepts. As the Germans say, "Es geht, man muss es nur wollen." Loosely translated: "Where there's a will, there's a way." •

Don't say we didn't warn you

If your company is planning to expand its business into the former East Germany, here are some technology tips to keep in mind:

- If your company takes over an existing site, prepare for a lot of facilities management activities. Approach the situation as if dealing with new construction.

  You will probably have to arrange for the installation of an entire telecommunication network. Coca-Cola GmbH, which took over a site in Berlin, not only needed to expand its regular telephone network but also hired a private contractor to install a high-speed transmission line using fiber-optic cable to connect two Application System/400 facilities in Berlin.
- Expect to innovate, especially if your site is outside a large city. The primary challenge will be how to work around the current outdated telecommunications infrastructure.
- When hiring IS staff, be prepared to spend time retraining employees in new technology. For example, Coca-Cola GmbH used a "snowballing concept" during its System/36-to-AS/400 conversions.

  Experienced employees who are familiar with the technology did the initial conversions, with new employees participating at increasing levels as they became more familiar with the technology.
- Expect to provide strategic planning and management activities because staff has little experience in these areas.
- Take project time estimates and double them, especially for installation activities. Everything, from material delivery to telephone service connections, will take longer than you expect.
- Keep in mind and include in systems planning the fact that in one to two years, eastern Germany will have an extremely modern telecom network and services.

From bleeding to leading edge

While the telecom infrastructure in the former East Germany is outdated today, in the next few years it will become one of the most modern in the world, if all goes as planned.

During the next five years, Telekom is planning to invest $37.5 billion in the Telekom 2000 project. According to Wolf Reiner Menzel, Telekom's department manager responsible for customer interfacing, the project should be complete in 1996 — two years earlier than planned.

Currently, Telekom is installing fiber-optic digital technology, not just at nodes but to the home. By the end of 1993, more than 200,000 private homes will be connected to the new technology. The network will enable use of Telekom's Integrated Services Digital Network system, which allows voice, text, video and data to be transmitted over one connection.

Two of Telekom's public phone booths in Berline, 11,824 of which the organization set up in 1991. Berline Cathedral and the TV tower at Alexanderplatz are in the background.

For its part, the D2 Privat cellular network will eventually become part of a network linking Europe, Asia and South America. When further enhanced, D2 Privat will serve as a personal communications network and become the basis for a new concept in telecommunications: the universal wireless phone. The resulting telephone service will be one of the most modern in the world.

Computer Careers

Make yourself too valuable to lay off

By Alice Bredin

THE RUMOR AT your medium-size bank is that layoffs are imminent, and you're on pins and needles wondering who will be let go. You're thinking, "Did I work hard enough? Am I as technically savvy as I should be? Should I have gotten that certification?"

Is there anything an information systems employee can do to become indispensable — or at least less likely to be laid off?

Employment experts and managers say "yes." IS employees who aggressively pursue projects at work, continually educate themselves and remain open to new technologies are the most likely to be spared when layoffs occur, they say.

One key to ensuring job security is to ask yourself what you can do to become a more valuable employee. In the IS field, this often means obtaining additional technical education, but it can also mean taking the initiative to get along better with co-workers or pursuing extra projects.

Managers say they tend to keep employees who exhibit a desire to continually improve themselves. "A lot of people do only what they need to [do to] get by, and that results in turnover," says Mary Boyko, an IS manager at Amco Corp., a Chicago-based manufacturer of wire shelving, storage materials and housewares.

On the boss' terms

But sometimes, employees who try to improve themselves make the mistake of doing it on their terms instead of their bosses' terms. "They'll say, 'I want to be trained in Unix,' but the company may not need you to learn Unix; in that case, it won't make you more valuable," says Steve McMahan, managing director at Source EDP in Boston, a placement firm specializing in software and data processing.

Many employee placement experts also say managers appreciate employees who want to give something back to the company. Once you have learned new technical skills, for example, it is important to share your information because that indicates you are a team player.

But don't play for the company at your expense.

Now that companies are going out of business and technologies are becoming obsolete, advisers say you must make sure you don't become obsolete along with them.

"Let's say you work at DEC and you are a VMS person. That is someone who should have been saying to themselves, 'Can I get into a Unix project internally?'" McMahan says. "Make sure your boss knows your goals as well by telling him or her you are concerned about being exclusively VMS and asking how you can diversify."

Resisting new technologies can also be grounds for layoffs, and Boyko says she witnesses this problem a lot.

"People aren't openly accepting CASE," she says. "People have a lot of excuses for not using it, like 'I can do it faster without it.'" This type of attitude leads to a great deal of turnover because Boyko is looking for employees who want to grow, she says.

Boyko encourages staff members to approach her and ask for information on how to learn more. But she says when she makes efforts to educate people with gestures such as cutting out magazine and newspaper articles, those articles often end up in the circular file.

"A lot of people just do what's necessary," she says. "It's like making a strawberry sundae and not putting the cherry on top because you don't want to make the effort to get on the step ladder and get the cherry out of the cupboard."

Bredin is a free-lance writer based in New York.

No job is guaranteed

If you think your manager's seat is secure, guess again. As more and more companies hire third parties or consultants, managers can become dispensable. An outsider can easily tell a company that he can do a better job than the IS department. If a manager wants to keep his job, he needs to explain why his department's activities make sense.

The first step for managers is to be active and involved in the downsizing process. If a consultant is brought in to lead downsizing efforts, the manager should express his interest in being involved in the decision-making.

"People are going to come in and tell a company that they can do something much more cheaply," says Jim Paul, a Pittsburgh-based consultant and president of Northtec consulting group. "A manager needs to be familiar with new technology and say, 'We are using that technology in this situation, but it would not work for all of our functions.'"

Paul recommends starting pilot projects with new technology and knowing where existing technology will still work. "If a person loses a job, it can be because an outsider comes in and says the company should be moving to a new technology. If a manager doesn't refute this, the manager looks bad."

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Job close-up

Network planners/architects: Directing a company's future

By Leslie Goff

Network planners/architects are not yet a standard part of the information systems ranks, but their numbers are growing. Manufacturing, which increasingly involves the integration of factory-floor, design and business applications, is expected to be a boom area for these positions.

Long stranded outside management ranks, programmers and systems analysts — with an allegiance to using new technologies to distribute data and applications, throughout the organization — now have a position custom-tailored for their skills.

Network planners/architects report to the chief information officer or sometimes the vice president just below the CIO. Their titles vary — manager of strategic communications, manager of data and network planning and operations, manager of architecture and planning — but they basically hold a mid- to high-level IS management post and are responsible for strategic network planning and design.

Financial services is also expected to spawn many opportunities, as are other industries with a very high need for cross-department information sharing. Anywhere there's a "need to pass information to different types of operations throughout the company, that's where the challenge is," says Bruce Boyle, manager of architecture and planning at the Commercial Flight Systems division of Honeywell, Inc. in Phoenix.

Because network planners/architects oversee a company's effort to distribute information, the position requires high-level familiarity with telecommunications, systems design and analysis and PC programming and support.

For example, Cesar Vallejos, manager of strategic communications at Sea-Land Service, Inc., an international shipping firm in Elizabeth, N.J., oversees the planning, design and operation of a network of 168 offices in 114 ports in some 70 countries. He is spearheading a conversion from mainframe-based transaction processing to a client/server architecture.

Double trouble

Boyle says he would look for two basic qualities in a network planner: "a really strong technical understanding of communications and PCs and a good grounding in traditional IS practices. You don't often find the two together."

Moreover, because the position is responsible for establishing a long-term, strategic plan for the corporate network and the services to be delivered on the network, you must be able to keep up with the latest technology developments. This can prove difficult as you acquire more overall management responsibility, Vallejos says.

But, being on the leading edge is what draws people to the job.

David Kellenberger, supervisor of network planning and design at the Public Service Co. of Colorado, an electric and gas utility in Denver, manages a staff of five that is responsible for transmitting critical data, voice and video and imaging information to field and office workers over the fiber-optic corporate telecommunications network.

Boyle is setting his company's technology direction for the next five years and coordinating applications development and user support for consistency with corporate goals.

"This is a highly visible position," says Stan Perkins, manager of data and network planning and operations at United Telephone-Northwest in Hood River, Ore. "It's very important to the direction of the company in delivering data services internally."

"Coordinating the resources to move us into a more efficient company through the traditional MIS environment" is what Perkins says he finds appealing. "It's having the flexibility of being able to look at all the different parts of IS to create a solution, an answer to a problem."

Network planners/architects

SALARY: $45,000 to $65,000+, depending on location and experience.

EXPERIENCE: Five to 10 years of systems analysis, design and implementation with an emphasis on telecommunications; technical support; PC support and programming; and a good foundation in traditional IS practices.

EDUCATION: A degree in electrical engineering or information technology with an emphasis on communications; MBA recommended. Or, experience level equivalent to a degree program.

SKILLS: Ability to stay at the forefront of technology, envision the future direction of your company, analyze and solve complex problems and work closely with business to establish information technology needs.

Different degrees

A particular academic degree is not required, but Kellenberger and Vallejos, who are engineers, recommend a degree in electrical engineering followed by a series of networking-related positions such as technician, programmer and systems analyst.

"The methodology used in training an engineer is often required in studying, planning or analyzing networks," Vallejos says.

An MBA can also complement a technical background, Kellenberger says.

The right experience, however, is key to landing a network planner/architect position because most companies are recruiting from within and are not combing the university landscape for candidates.

In fact, Robin Wells, network coordinator at the National Grange Mutual Insurance Co. in Keene, N.H., parlayed his research and development and factory-floor experience at McDonnell-Douglas, Honeywell and Motorola, Inc. into his current position — his first in IS.

"It helped me that I came out of R&D. I was used to dealing with new technology," Wells says.

The position also offers room for growth. A network planner/architect could move into a divisional vice president post or a CIO position, as well as enter the telecommunications field through a start-up business or by joining an established company.

Goff is a New York-based free-lance writer.

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President
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"Looking ahead, we expect several factors to escolote our recruitment odvertising needs - the growing demond by clients for greater selectivity, on increasingly specialized industry, o continuolly mobile morketploce, and NCA's expansion into the lucrotive European marketploce. As this all hoppens, we intend to increose our odvertising budget in *Computerworld* proportionately.

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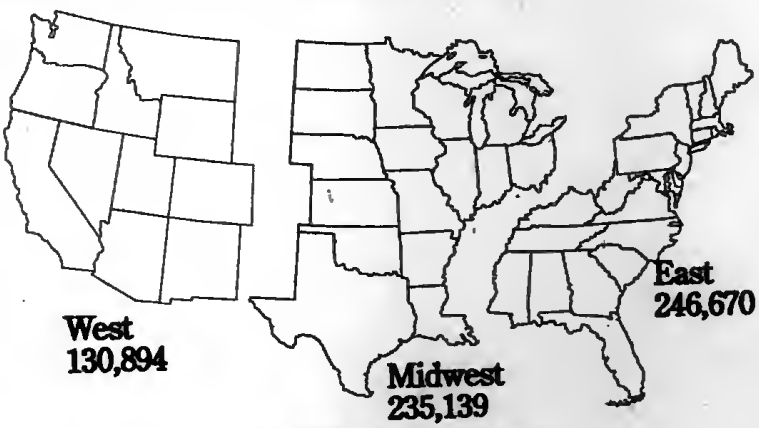

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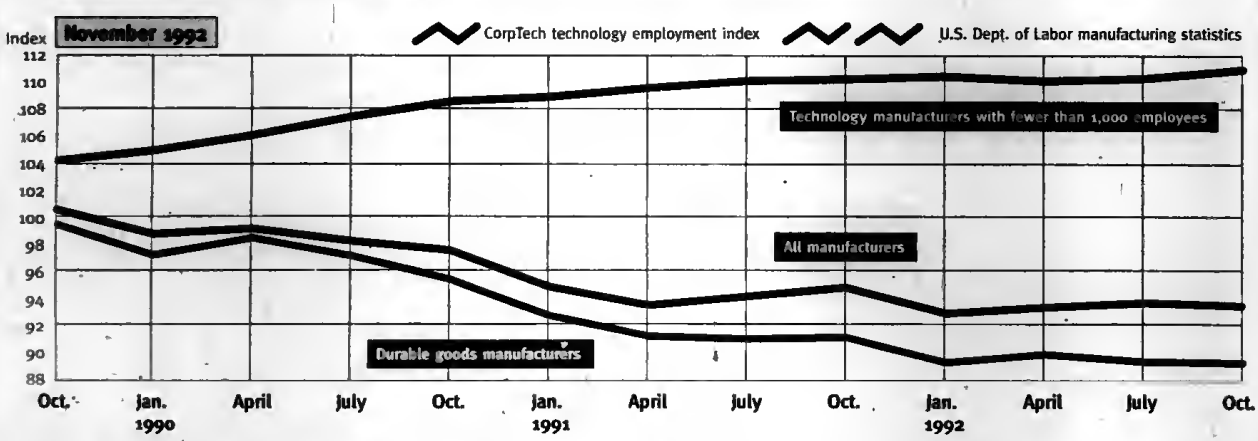
Computerworld/CorpTech Career Index

Technology manufacturers saw a slight uptick in their employee count during third-quarter 1992



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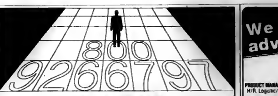

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Software Engineer: 40 hrs./wk., 8 am-5 pm; $40,000/yr. Job requires: Master's degree in Electrical Engineering or Computer Engineering and 9 months experience as a Research Engineer (on-campus employment acceptable). Job also reqs.: 1) Exp. must include 9 mos. exp. using UNIX, OS/2, & MS-DOS operating systems; 2) Exp. must include 9 mos. exp. using MATLAB, ACSL, or Matrix X, with C & FORTRAN interfacing; 3) Exp. must include 9 mos. exp. using control & embedded systems for automotive applications; & 4) 2 professional publications in control systems for automotive applications. Special reqs. 1), 2), & 3) may be met concurrently during the same 9-mo. period. Job duties: Evaluate engineering related contract announcements by government and/or industry. Perform feasibility study/analysis. Prepare proposals & contracts. Prepare technology capability demonstrations & project prototypes. Qualified applicants should send resume & verification of reqs. to: 7310 Woodward, Rm. 415, Detroit, MI 48202. Ref. #87992. Employer Paid Ad.

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System Consultant, 40hrs/wk., 9:00am-5:00pm, $33,500/year. Consult with clients to develop specifications for medical software and office expert systems for domestic and Asian markets. Program development, modification and maintenance. Set-up and customization of multitasking/multiuser LAN. Development of training materials as well as training of medical staff in systems. 45% travel. Tools: PC, mini, and mainframe computers, Basic; C; Pascal; LISP. B.S. in Computer Science or Industrial Design as well as six months experience as a Systems Consultant or Computer Lab Assistant required. Previous experience must include: C; Basic; Pascal; networking (PC-PC, PC-mainframe); one project with expert systems. Education must include one course using LISP. Must be willing to travel 45% of the time. Must have proof of legal authority to work permanently in the U.S. Send two copies of resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Len Boksa, Reference #V-IL-5820-B. NO CALLS. An Employer Paid Ad.

PROGRAMMER ANALYST required. Software development including design, analysis, coding, testing & implementation of programming systems using IMS DB/DC, TELON, COBOL, PL/1, NATURAL/ADABAS & CICS in IBM 3090 computing environment. Applicants must have 2 yrs experience in the job duties described above, including 2 yrs experience with computerized insurance benefits/claims systems architecture, Database management Systems (DBMS) and Real Time Systems Design. Applicant must be willing to work for a software consulting company with relocation likely to different states every 12 to 24 months as employer's needs dictate. Must have proof of legal authority to work in the U.S. Salary - $46,000 per yr. for a 40 hr. work week. Interested applicants send resume to Indiana Department of Employment & Training Administration, Attn: Gene Replogle, 10 North Senate Ave., Indianapolis, IN 46204. Include Social Security Number. Job Order No.: 3288471. Ad paid by an Equal Opportunity Employment employer.

APPLICATIONS SCIENTIST: for the area of peptide modeling & research related to new computational procedures. Expertise in computational chemistry (molecular mechanics, dynamics & Monte Carlo modeling, & knowledge of quantum-chemical programs) applied to peptides, proteins & other biomolecules; conformational analysis of molecular shape; & numerical simulation of continuum models which describe physico-chemical phenomena. Experience in software development in various environments (workstations, supercomputers; C & Fortran programming languages) & knowledge of biochemical and/or molecular biology experimental techniques (synthesis, spectroscopy) & the relevant scientific literature in these areas. Ph.D in Chemistry & 2 years experience in job offered required. Job & interview site: San Diego, CA. 40 hrs/wk. Salary: $53,300/yr. Send this ad & your resume to Job #MC29049, P.O. Box 269065, Sacramento, CA 95826-6065 no later than 1/7/93.

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Top reasons to buy used:
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3. Shortages of new systems from the manufacturer. This is common after a leading vendor makes a major price cut and can't keep up with demand.

Did you know? Approximately 20% of Fortune 1,000 firms purchase large CPUs in the used market, estimates Computer Economics.

By Alice LaPlante

When Debbie Colomb was searching for a system to replace her Digital Equipment Corp. MV 7800XP, her first move was to contact DEC for technical advice and a price quote. But she soon ruled out buying a new machine.

"I got a very strong impression that the vendor was just pushing new equipment in order to make quarterly quotas," says Colomb, senior vice president of information systems at VHA Long Term Care, a Memphis-based service bureau for nursing homes.

After calling a number of used-equipment vendors for price quotes, Colomb says she decided this was the route for her. "If you can get virtually the same equipment for just a quarter of the price, why would you buy new?"

VHA ended up buying a used MV 9600/2000 for $22,000 from BL Associates, Inc., a Boston-based used-equipment vendor. The same system, purchased new from DEC, would have cost more than $100,000. "It didn't seem like much of a decision," she says.

Many IS managers have discovered that price has helped the used market make enormous credibility gains.

Prices are for Nov. 23, 1992, of some of the most active PC models on the used computer market that are still available new.

Machine	New street price	Used price
Clone 286 (1/40)	[redacted]	$275
Clone 386/25 (1/40)	[redacted]	$675
Compaq LTE/386	[redacted]	$1,575
Mac Classic (4/40)	[redacted]	$775
Mac PowerBook (1/40)	[redacted]	$1,425
Mac IICI (5/80)	[redacted]	$1,875
Toshiba T2200SX	[redacted]	$1,650
LaserJet III	[redacted]	$1,125

(Note: Megabytes of RAM/hard drive size are in parentheses.)

Source: American Computer Exchange Corp.

"The used computer business has changed dramatically in the last 10 years," says Chuck Grimm, MIS manager at Amana Refrigeration Corp. in Amana, Iowa, who has purchased a large number of used systems. Vendors are more reputable and knowledgeable, he says.

Grimm purchased a used IBM 4381 mainframe for $70,000 (about one-fifth of the new price) to off-load processing from an overtaxed IBM mainframe. "This is a low-cost, interim solution so we can prolong the life of our 3090," he says. "Reliability? It really isn't an issue anymore," he adds. "Once a CPU is installed, your software loaded, and the system maintenance certified by the vendor, it's not likely to fail."

Another priority is service. "Can this dealer deliver the box when they say they can?" asks Michael Erbschloe, vice president of Computer Economics, a consulting firm in Carlsbad, Calif. "That's a real issue when you're putting in a major CPU."

IS chiefs say it pays to do your homework. When Robin Church, IS director at Formation, Inc., a peripherals subsystems manufacturer in Moorestown, N.J., was searching for a used computer vendor, his key concerns were the kinds of peripherals and options available and what system components had incompatibility problems. He eventually purchased an IBM 9375 for $8,000. "There is really no comparison to buying used in terms of cost and effectiveness."

LaPlante is a free-lance writer based in Palo Alto, Calif.

PCs, too

A strong used market is starting to emerge for PC computer products as well. Bob Zies, president of National Computer Exchange, Inc., a New York-based used PC broker, estimates that the used PC market is growing at approximately 20% annually.

Ryan Granard is operations manager at Computer Education International (CEI), a Glendale, Calif., consulting firm that provides computer training for local corporations.

For cost reasons, Granard typically buys used equipment for classroom use. "I have enough knowledge and experience that I feel comfortable buying used equipment," he says.

Although he has purchased used PCs from a variety of sources over the years, he used Atlanta-based American Computer Exchange Corp. to purchase more than 30 Compaq Computer Corp. portables this past year. The main reason was price: He purchased Compaq Portable III 286-based systems for only $500 each. —*Alice LaPlante*

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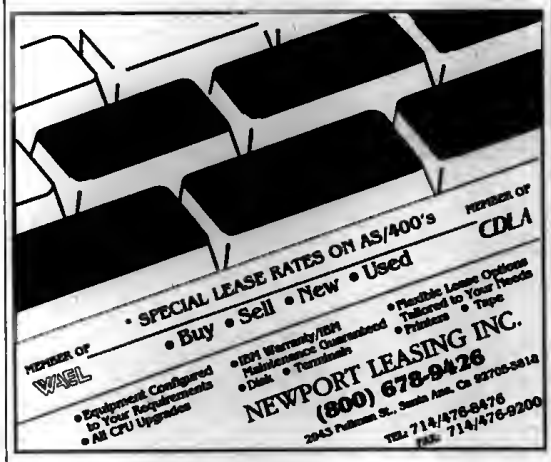

Buy/Sell/Lease

Index of used computer prices

Week ending December 11, 1992

	Closing Prices BoCoEx	AmCoEx
IBM AT 339	$400	$350
PS/2 Model 30 286	$500	$425
PS/2 Model L40SX	$800	$1075
PS/2 Model 55SX	$1,050	$825
PS/2 Model 60	$600	$475
PS/2 Model P70	$1,650	$1,425
PS/2 Model 80	$1,200	$1,075
PS/2 Model 90	$3,100	$2,900
Compaq Portable II	$425	$275
Portable III	$500	$400
Portable 386	$950	$725
SLT-286	$800	$675
LTE-286	$800	$700
DeskPro 386s	$850	$825
DeskPro 386/33	$1,600	$1,500
Apple Macintosh Classic	$750	$625
SE	$675	$650
IIX	$2,300	$1,950
IICI	$2,600	$2,225
IIFX	$3,550	$3,200

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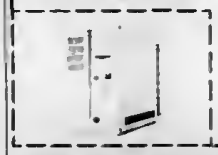

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Sealed proposals will be received by CDPA, 301 N. Lamar St., 301 Bldg., Suite 508, Jackson, MS 39201 for the following:

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Detailed specifications for each RFP with a charge may be obtained by submitting a written request accompanied by the appropriate payment. No phone requests will be accepted. NOTE: Valid forms of payment are corporate checks on a Mississippi bank, certified check or POSTAL money order made out at Central Data Processing Authority. No cash or out-of-state-checks. For RFPs with no charge call Kelli Brown @ 601-359-2604. If you would like at pick up RFPs at CDPA, you may do so between the hours of 1:00-3:00 p.m. only. The CDPA reserves the right at reject any and all bids and proposals and to waive informalities.

The New York City FINANCIAL INFORMATION SERVICES AGENCY has issued two Requests for Proposal for the acquisition of ADABAS/COMPLETE Performance Monitoring Tools (Pre-proposal conference to be held on January 8, 1993 and Proposals due on February 8, 1993) and for the acquisition of DB2 Compression Utility Software (Pre-proposal conference to be held on January 13, 1993 and Proposals due on February 16, 1993). Request for Proposal may be obtained by calling Mr. Raju Kahatriya at (212) 206-3157 for ADABAS/COMPLETE Performance monitoring tools and Ms Adele Croce at (212) 206-3255 for DB2 Compression utility software. Minority and Women Owned Business Enterprises are encouraged to submit proposals. Further details regarding the specifications may be found within the RFPs.

The State of Maryland is soliciting proposals to acquire services of "computer programming/integrating" contractor(s), with Medicaid experience, to select, transfer, enhance, and install a HCFA certified Medicaid System.

The Original and eight copies of each proposal must arrive by Feb. 26, 1993, 2:00 pm, at the issuing office: Dept of Health and Mental Hygiene, Medical Care Operations Admin., Joseph E. Davis, Director, Room 55-16, 201 West Preston St., Balto., MD 21201.

A copy of the RFP may be obtained from the office of the Project Director, John J. O'Brien, at (410) 225-6957. The document will be forwarded upon request and without charge to interested parties.

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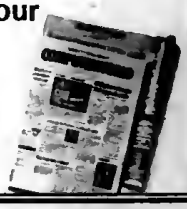

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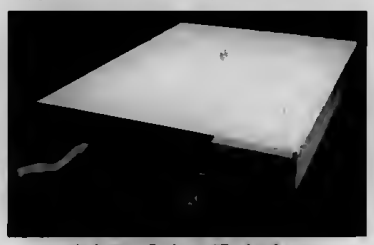

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Computerworld's Friday Stock Ticker

Gainers / Losers

Percent

Gainers		Losers	
Gandalf Technologies Inc.	64.3	Quarterdeck Office Sys.	-38.0
Software Toolworks Inc.	27.3	Spinnaker Software	-33.9
Newbridge Networks Corp. (H)	18.9	Artel Communication Corp.	-25.0
Kendall Square Research (H)	17.3	Everex Systems Inc. (L)	-25.0
Pyramid Technology	16.2	IBM (L)	-18.1
Intelligent Electronics	15.7	StrataCom Inc.	-16.1
Brooktrout Technology	13.2	McAfee Associates	-15.4
3COM Corp. (H)	11.6	Wang Labs Inc. (L)	-14.4

Dollar

Gainers		Losers	
SynOptics Communications (H)	7.75	IBM (L)	-11.25
Cabletron Systems	6.75	Progress Software Corp.	-3.25
Intel Corp. (H)	6.50	Storage Technology	-3.00
Newbridge Networks Corp. (H)	6.38	Wellfleet Communications	-3.00
Dell Computer Corp. (H)	3.75	System Software Assoc.	-2.75
Microsoft Corp.	3.63	McAfee Associates	-2.75
American Info Techs Corp. (H)	2.88	IMRS	-2.38
Northern Telecom Ltd.	2.75	Software Spectrum Inc.	-2.50

[redacted]

Several new faces appear on the expanded *Computerworld* Friday Stock Ticker this week. Among them are the following:

InaCom Corp. (INAC)
PC reseller InaCom said it will report close to $1 billion in revenue in fiscal 1992, making it the fourth-largest reseller chain. InaCom works through systems integrators and other service providers as well as through its ValCom and Inacomp Computer Centers.

SHL Systemhouse, Inc. (SHKIF)
Ottawa-based SHL Systemhouse raked in $738.6 million in fiscal 1992 revenue, ranking it as the 11th-largest systems integrator. SHL Systemhouse expects continued growth because of its increasing backlog. Partly because of onetime charges, the most recent quarter resulted in a net loss of $7.4 million on revenue of $190.4 million.

Software Spectrum, Inc. (SSPE)
Software Spectrum resells software and maintains a library of applications that users can evaluate prior to purchase. The firm, in Garland, Texas, reported $189 million in revenue for the last fiscal year (ended in March 1992). Revenue for the most recent quarter was $49.9 million, with profits of $1.2 million; both are up from the year-ago quarter.

Telebit Corp. (TBIT)
Once focused on producing high-speed modems, Telebit has expanded into higher margin internetworking products. According to Wall Street firm Needham & Co., Telebit now derives approximately 17% of its revenue from internetworking goods such as its NetBlazer router, which uses standard telephone lines for data communications. Annual sales are approximately $50 million.

PeopleSoft, Inc. (PSFT)
PeopleSoft went public in November, with the initial share price of 17 jumping quickly to more than 30. The company develops a line of human resources management applications for client/server architectures. Revenue has grown quickly since PeopleSoft was founded in 1987, reaching almost $21 million for the nine-month period ended Sept. 30.

StrataCom, Inc. (STRM)
StrataCom's initial public offering was in September. According to a report by Montgomery Securities, the multiplexer vendor benefits from strategic relationships with **Digital Equipment Corp.** (DEC) and Sprint International that will facilitate broad penetration of the corporate wide-area networking market. *—Derek Slater*

Communications and Network Services — Up 1.8%

Exch	52 Week Range			Dec 18 Close	Wk Net Change	Wk Pct Change
OTC	26.38	9.63	3COM Corp (H)	26.38	2.75	11.6
NYS	71.88	56.25	American Info Techs Corp (H)	71.88	2.88	4.2
NYS	49.63	36.63	AT&T (H)	49.63	0.88	1.8
OTC	4.25	0.75	Artel Communication Corp	1.13	-0.38	-25.0
OTC	22.75	10.25	Banyan Systems Inc. (H)	19.75	0.00	0.0
NYS	51.63	40.25	Bell Atlantic Corp (H)	51.63	2.00	4.0
NYS	55.50	43.38	BellSouth Corp	52.13	2.13	4.3
NYS	6.75	3.63	Bolt, Beranek & Newman	4.38	0.25	-5.4
OTC	17.75	10.00	Brooktrout Technology	15.00	1.75	13.2
NYS	78.75	42.13	Cabletron Systems	78.75	6.75	9.4
OTC	31.00	17.75	Chipcom Corp	25.50	-1.00	-3.8
OTC	76.50	27.38	Cisco Systems Inc	73.25	2.25	3.2
OTC	35.25	5.50	Compression Labs Inc	12.25	-1.13	-8.4
OTC	3.38	0.88	Data Switch Corp	2.50	-0.06	-2.5
NYS	23.63	13.75	Digital Comm. Assoc.	17.38	0.50	3.0
OTC	13.25	7.50	Digital Systems Int'l Inc.	11.00	0.50	4.8
OTC	20.88	3.63	OSC Communications (H)	20.00	1.00	5.3
OTC	10.88	4.75	Fibronics Int'l Inc	6.50	-0.38	-5.5
OTC	37.50	10.50	FileNet Corp	21.25	-0.13	-0.6
OTC	3.38	1.50	Gandalf Technologies Inc	2.88	1.13	64.3
OTC	2.25	0.69	Gateway Communications	1.25	-0.13	-9.1
NYS	6.38	2.63	General Datacomm Inds (H)	5.75	-0.75	-4.2
ASE	5.88	1.00	Go Video	2.50	-0.38	-13.0
NYS	35.75	28.88	GTE Corp.	34.25	0.38	1.1
NYS	72.00	51.13	ITT Corp	70.00	0.25	0.4
OTC	39.13	27.50	MCI Communications Corp (H)	39.13	1.13	3.0
OTC	14.25	2.25	Microcom Inc.	5.50	-0.38	-6.4
OTC	18.25	12.00	Netrix Corp	17.00	-0.38	-2.2
OTC	16.25	9.63	Network Computing Devices	14.25	0.50	3.6
NYS	18.25	8.88	Network Equipment Tech (L)	9.38	0.13	-1.3
OTC	25.38	8.00	Network General	18.75	1.00	5.6
OTC	20.00	8.50	Network Systems Corp	13.25	1.13	9.3
OTC	40.13	6.88	Newbridge Networks Corp. (H)	40.13	6.38	18.9
NYS	49.25	30.50	Northern Telecom Ltd	44.13	2.75	6.6
OTC	33.50	22.50	Novell Inc	28.75	0.75	2.7
NYS	88.38	69.13	Nynex Corp	84.50	0.75	0.3
OTC	37.50	14.50	Octel Communications Corp	20.75	-1.75	-7.8
OTC	9.88	3.38	Penril Data Comm Networks	4.50	0.38	9.1
OTC	53.00	10.25	PictureTel Corp	25.00	2.25	9.9
OTC	18.75	7.00	Proteon Inc.	9.25	-0.38	-3.9
NYS	39.00	24.50	Scientific Atlanta Inc (H)	37.25	0.38	1.0
NYS	73.25	56.63	Southwestern Bell Corp (H)	73.75	2.25	3.2
NYS	26.75	20.75	Sprint Corp	25.50	0.25	1.0
OTC	26.25	5.88	Standard Microsystems Corp (H)	24.88	0.38	1.5
OTC	15.75	6.00	StrataCom Inc.	11.75	2.25	-16.1
OTC	77.75	18.75	SynOptics Communications (H)	77.25	7.75	11.2
OTC	7.13	4.38	Telebit Corp	6.00	-0.13	-2.0
OTC	24.25	12.25	US Robotics	20.13	0.13	-0.6
NYS	40.00	32.88	U S West Inc.	38.88	0.88	2.3
OTC	76.75	24.00	Wellfleet Communications	69.75	-3.00	-4.1
OTC	22.00	7.00	Xircom	8.50	-0.75	-8.1

PC's and Workstations — Up [illegible]

Exch	52 Week Range			Dec 18 Close	Wk Net Change	Wk Pct Change
OTC	10.75	3.50	Advanced Logic Research	3.75	-0.63	14.3
OTC	70.00	41.50	Apple Computer Inc.	58.50	0.25	0.4
OTC	24.50	11.25	AST Research Inc.	21.00	1.50	7.7
NYS	19.25	6.75	Commodore Int'l	7.63	-0.13	-1.6
NYS	45.63	22.25	Compaq Computer Corp. (H)	45.63	2.38	5.5
OTC	44.50	15.00	Dell Computer Corp (H)	44.50	3.75	9.2
OTC	7.25	0.38	Everex Systems Inc. (L)	0.38	-0.13	-25.0
NYS	35.38	22.13	Harris Corp (H)	33.75	0.75	2.3
NYS	85.00	47.63	Hewlett Packard Co.	65.88	0.50	0.8
NYS	29.75	14.13	Silicon Graphics	27.38	1.13	4.3
OTC	36.13	22.50	Sun Microsystems Inc.	33.25	0.63	1.9
NYS	31.75	22.75	Tandy Corp (H)	30.75	1.00	3.4
NYS	11.13	5.00	Zenith Electronics	4.25	0.00	0.0
OTC	25.50	2.75	Zeos International Ltd	3.75	0.25	2.1

Large Systems — Off [illegible]

Exch	52 Week Range			Dec 18 Close	Wk Net Change	Wk Pct Change
ASE	20.63	6.63	Amdahl Corp	6.88	0.50	6.8
NYS	16.38	4.75	Convex Computer	7.63	0.00	0.0
OTC	11.25	1.88	Cray Computer	4.38	-0.13	-2.7
NYS	49.50	19.00	Cray Research Inc.	22.88	-0.13	-0.5
NYS	18.13	7.13	Data General Corp	11.88	0.50	4.4
NYS	65.38	31.50	Digital Equipment Corp	31.88	1.38	-4.1
NYS	100.38	50.88	IBM (L)	50.88	11.75	-18.1
OTC	15.25	5.50	Kendall Square Research (H)	15.25	2.25	17.3
NYS	119.25	83.00	Matsushita Electronics	96.50	2.25	2.4
OTC	17.50	6.00	Pyramid Technology	9.88	1.38	16.2
OTC	19.75	11.13	Sequent Computer Sys. (H)	18.63	0.63	3.5
OTC	18.38	2.75	Sequoia Systems Inc.	3.50	-0.00	0.0
NYS	56.25	23.50	Stratus Computer Inc.	35.38	1.38	-3.7
NYS	15.88	9.75	Tandem Computers Inc (H)	14.88	0.13	-0.8
NYS	11.75	4.00	Unisys Corp	10.38	0.63	6.4
ASE	7.50	0.06	Wang Labs Inc. (L)	0.38	-0.06	-14.4

Software — Off 1.2%

Exch	52 Week Range			Dec 18 Close	Wk Net Change	Wk Pct Change
OTC	68.50	25.25	Adobe Systems Inc.	30.50	0.88	2.8
OTC	44.25	10.25	Aldus Corp	13.50	0.25	-1.8
OTC	19.75	7.00	Americad Software Inc	8.88	-0.25	-2.7
OTC	22.75	9.75	Ask Computer Systems (H)	22.75	0.38	1.7
OTC	38.50	23.25	Autodesk Inc	47.25	1.00	2.2
OTC	37.75	3.75	Bachman Info. Systems	5.63	-0.38	6.3
OTC	43.00	32.75	BGS Systems Inc.	41.25	2.25	5.8
OTC	79.00	37.75	BMC Software Inc	67.13	2.38	3.7
OTC	25.50	13.75	Boole & Babbage	21.50	-0.50	-2.3
OTC	86.75	19.75	Borland Int'l Inc. (L)	22.00	1.25	6.0
OTC	10.50	3.63	CE Software	4.06	-0.13	3.0
ASE	31.13	9.38	Cheyenne Software Inc. (H)	31.13	2.25	7.8
OTC	17.50	8.25	ChipSoft	15.00	1.25	7.7
OTC	13.13	5.63	Cognos Inc.	7.25	0.75	-3.3
NYS	19.75	9.25	Computer Associates	19.75	1.63	9.0
NYS	12.38	4.75	Computervision Corp	4.88	0.25	5.4
OTC	20.00	6.25	Comshare Inc	13.25	-0.50	-3.6
OTC	47.88	6.00	Easel Corp	10.75	-1.50	-12.2
OTC	26.50	11.75	Frame Technology	13.88	0.38	2.8
OTC	25.00	11.50	Group 1 Software	15.38	-0.38	-3.1
OTC	6.63	3.50	Hogan Systems Inc.	6.25	0.63	11.1
OTC	23.38	13.75	IMRS	21.00	-2.50	-10.6
OTC	36.25	18.50	Information Resources	30.88	1.13	-3.5
OTC	34.25	6.31	Informix Corp (H)	31.00	-0.75	2.4
OTC	22.38	11.00	Intergraph Corp	14.00	1.00	7.7
OTC	15.00	7.38	Interleaf Inc	12.00	0.88	7.9
OTC	20.25	10.25	Intersolv Inc.	12.50	0.00	0.0
OTC	[illegible]	9.50	Knowledgeware Inc	15.50	1.13	7.8
OTC	[illegible]	28.75	Legent Corp (H)	48.25	0.75	0.5
OTC	38.75	14.76	Lotus Development	21.00	0.25	1.2
OTC	23.25	15.13	McAfee Associates	15.13	-2.25	-15.0
OTC	7.38	1.88	Meca Software	5.88	0.25	4.4
OTC	22.25	5.25	Mentor Graphics	8.38	-0.13	-1.5
OTC	42.75	22.25	Micro Focus (H)	42.25	1.25	3.0
OTC	20.38	8.50	Micrografx Inc.	8.38	-0.25	-2.9
OTC	95.00	65.50	Microsoft Corp.	88.88	3.63	4.2
OTC	24.75	12.00	Oracle Corp	20.50	-1.38	-6.3
OTC	56.25	23.38	Parametric Technology	50.75	2.75	5.2
OTC	32.00	22.50	PeopleSoft	28.63	-1.38	-4.6
OTC	11.00	3.50	Phoenix Technologies	5.88	-0.75	-11.3
OTC	25.75	11.25	Platinum Technology	20.75	2.00	11.0
OTC	61.50	29.00	Progress Software Corp.	38.50	-3.25	5.4
OTC	26.65	3.88	Quarterdeck Office Sys.	3.88	-2.38	-38.0
OTC	32.75	11.25	Rainbow Technologies Inc.	20.00	-1.00	-4.8
OTC	22.75	4.00	Rasterops	8.00	0.50	6.7
OTC	17.25	3.63	Ross Systems	9.00	0.75	9.1
OTC	18.88	8.50	Sapiens USA Inc.	18.50	1.13	6.9
OTC	26.25	6.75	Software Publishing Corp.	8.38	-0.50	-5.6
OTC	8.00	2.00	Software Toolworks Inc.	7.00	1.50	27.3
OTC	2.75	0.75	Spinnaker Software	1.16	-0.59	33.9
OTC	18.50	3.25	State of the Art	8.00	0.25	3.2
NYS	25.25	13.75	Sterling Software Inc.	20.00	-0.63	3.0
OTC	30.00	8.00	Struct. Dynamics Research	11.63	-0.25	-2.1
OTC	47.00	19.25	Sybase Inc (H)	42.75	-0.88	-2.0
OTC	51.00	5.88	Symantec Corp	12.88	-1.25	-8.8
NYS	15.50	5.25	Systems Center Inc.	7.25	0.25	3.6
OTC	38.00	17.38	System Software Assoc.	31.63	-2.75	-8.0
OTC	13.25	2.50	Tandic Corp	3.00	-0.50	-14.3
OTC	23.75	14.50	Walker Interactive Systems	21.00	-1.13	-5.1
OTC	5.38	1.38	Wordstar	2.44	0.00	0.0

Semiconductors — Up [illegible]

Exch	52 Week Range			Dec 18 Close	Wk Net Change	Wk Pct Change
NYS	21.50	7.38	Advanced Micro Devices	18.38	1.50	8.9
NYS	15.13	2.75	Analog Devices Inc. (H)	15.00	0.13	0.8
OTC	17.00	7.63	Atmel Corp. (H)	15.38	0.00	0.0
OTC	14.13	3.25	Chips and Technologies	4.63	-0.25	-5.1
NYS	18.38	7.38	Cypress Semiconductor Corp	9.38	-1.00	-9.6
NYS	14.38	7.00	Dallas Semiconductor	13.75	0.25	1.9
OTC	85.50	42.25	Intel Corp. (H)	85.50	6.50	8.2
NYS	11.13	4.88	LSI Logic Corp. (H)	10.50	-0.25	2.3
NYS	22.38	12.88	Micron Technology	18.75	1.13	6.4
NYS	105.38	58.13	Motorola Inc. (H)	104.75	2.25	2.2
NYS	14.13	5.88	National Semiconductor	11.13	0.25	2.3
OTC	27.00	8.25	Sierra Semiconductor	12.25	-0.75	-5.8
OTC	35.50	22.25	SynOpsys	34.25	1.00	3.0
NYS	52.25	26.00	Texas Instruments	46.75	-0.50	-1.1
OTC	10.50	6.00	VLSI Technology	7.75	0.13	1.6
OTC	7.00	2.13	Weitek	5.00	0.13	2.6
ASE	8.00	2.13	Western Digital Corp.	7.38	-0.25	-3.3
OTC	31.00	14.50	Xilinx	23.50	0.25	1.1
OTC	33.38	17.50	Zilog Inc.	31.75	-1.00	-3.1

Peripherals and Subsystems — Off [illegible]

Exch	52 Week Range			Dec 18 Close	Wk Net Change	Wk Pct Change
OTC	11.25	3.88	Archive Corp	11.13	0.00	0.0
OTC	29.50	15.50	BancTec Inc.	27.38	-0.25	-0.9
OTC	23.38	9.25	Cambex Corp	14.13	0.00	0.0
ASE	15.38	5.75	Cognitronics Corp. (H)	14.63	0.25	1.7
NYS	23.88	13.50	Conner Peripherals	20.25	0.13	0.6
OTC	22.75	10.75	Creative Technologies Inc.	20.25	-0.75	-3.6
OTC	27.50	14.25	Data Race Inc.	24.50	-1.00	-3.9
ASE	19.66	4.75	Dataram Corp.	10.38	-0.88	-7.8
NYS	22.63	6.00	EMC Corp.	22.63	1.63	7.7
OTC	10.00	4.75	Emulex Corp	8.38	-0.63	-6.9
OTC	23.00	13.25	Evans & Sutherland	16.75	-1.50	-8.2
OTC	40.63	12.00	Exabyte	17.38	0.00	0.0
OTC	44.00	16.25	Intelligent Info. Systems (H)	41.25	-1.75	-4.1
OTC	11.25	4.75	Iomega Corp	6.88	0.13	1.9
OTC	34.75	10.75	IPL Systems Inc.	11.25	-0.50	-4.3
OTC	23.25	10.75	Komag Inc.	17.50	-0.75	-4.1
OTC	19.63	4.76	Maxtor Corp	13.25	-2.75	-12.9
OTC	12.63	7.13	Micropolis Corp.	8.63	-0.50	-5.5
NYS	107.00	85.50	3M Corp	101.75	-1.63	-1.6
OTC	6.75	3.75	Printronix Inc.	5.25	0.75	5.0
NYS	15.38	6.88	QMS Inc.	12.75	0.38	4.1
OTC	18.00	9.25	Quantum Corp	10.13	-0.75	-7.5
OTC	12.75	3.75	Radius Inc.	5.00	-0.75	-13.0
NYS	14.75	7.50	Recognition Equipment (H)	14.13	0.38	2.7
OTC	13.88	5.63	Rexon Inc.	12.00	0.25	2.1
OTC	22.38	8.25	Seagate Technology (H)	19.00	1.63	-7.9
NYS	28.00	20.00	Storage Technology	20.00	3.00	13.0
NYS	22.88	16.50	Tektronix Inc.	20.13	1.75	9.5
NYS	82.25	63.63	Xerox Corp.	78.25	0.25	1.0

Services — Off [illegible]

Exch	52 Week Range			Dec 18 Close	Wk Net Change	Wk Pct Change
OTC	23.50	12.16	American Mgmt. Systems (H)	22.88	0.25	1.1
NYS	5.38	3.00	Anacomp Inc.	4.25	0.00	0.0
OTC	24.50	13.50	Analysts Int'l (H)	24.50	1.50	6.5
NYS	54.50	38.75	Auto Data Processing (H)	54.50	2.00	3.8
NYS	17.25	7.16	Ceridian Corp	14.88	0.13	0.8
NYS	23.22	12.38	Comdisco Inc	15.00	-0.38	3.2
OTC	13.50	6.75	Computer Horizons	9.63	0.25	2.7
NYS	84.88	57.00	Computer Sciences	77.50	1.75	-2.2
NYS	10.13	7.00	Computer Task Group	8.25	-0.50	-5.7
NYS	40.50	15.00	CompUSA Inc.	31.38	-0.38	-1.2
OTC	19.25	6.00	Corporate Software	11.25	-1.00	-8.2
OTC	30.75	7.75	Egghead Discount Software	10.13	0.25	2.5
NYS	33.75	25.25	General Motors E (EDS)	32.88	0.63	1.9
OTC	14.75	9.00	InaCom Corp	13.75	-1.00	-6.8
OTC	30.38	6.25	Intelligent Electronics	12.88	1.75	15.7
OTC	14.88	6.63	Merisel	10.00	0.00	0.0
OTC	15.75	5.75	MicroAge Inc.	6.00	1.25	-23.5
OTC	40.00	19.66	Paychex	34.38	-2.25	-6.1
NYS	82.25	58.63	Policy Management Sys.	78.63	-0.75	-0.9
NYS	25.56	16.38	Reynolds and Reynolds	24.25	-0.75	-3.0
OTC	32.00	22.00	SEI Corp	29.75	-0.25	-0.8
OTC	24.38	16.88	Shared Medical Systems	22.38	0.63	2.9
OTC	14.38	5.75	SHL Systemhouse (L)	6.00	-0.63	-9.4
OTC	29.25	13.50	Software Spectrum Inc	22.50	-2.50	-10.0
OTC	31.00	17.50	SunGard Data Systems (H)	29.38	0.75	2.5
NYS	3.63	1.13	Ultimate Corp.	1.88	0.00	0.0

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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In Brief

Intel rides the 486

Intel Corp. last week said high demand for its 1486 microprocessor would propel fourth-quarter results well above analysts' expectations. Fourth-quarter revenue is expected to be up about 25% from the $1.43 billion posted in the third quarter of this year, the Santa Clara, Calif., firm said.

IBM buys into CASE

IBM plans to buy an unspecified minority stake in Caseworks, Inc., an Atlanta developer of tools for building graphical user interfaces (GUI). Caseworks will not be an AD/Cycle partner, but its GUI tool for OS/2 will be incorporated into the development framework.

Wang asks for time

Wang Laboratories, Inc. has asked the U.S. Bankruptcy Court for 90 more days to file a Chapter 11 reorganization plan. The Lowell, Mass., firm, which filed for protection in August, was due to submit a plan last week but said it needs an extension to "reconcile creditors' claims [and] negotiate . . . acceptance of the plan," among other tasks.

Radius pessimistic

PC and Apple Computer, Inc. Macintosh enhancement vendor Radius, Inc. said sales for the quarter ending Dec. 31 would be lower than expected. As a result, the San Jose, Calif., company expects to report an operating loss for the quarter. The loss, however, is expected to be partially offset by a onetime tax benefit resulting from the adoption of Financial Accounting Statement No. 109.

IPO floated

Mainframe software and services vendor Compuware Corp. hopes to raise $180 million through an initial public offering, in which 8.2 million shares are being offered at $22 a share.

Kahn retrenches, reflects

Admits mistakes; reorganizes to respond to fierce database competition

By Christopher Lindquist
SCOTTSVALLEY, CALIF.

The ongoing reorganization at Borland International, Inc. — a company that was described as the "Microsoft of the '90s" by a Wall Street pundit only a few months ago — indicates just how difficult it has become to compete in the increasingly Microsoft Corp.-dominated market.

For example, Borland currently faces its stiffest competition from Microsoft in the database arena.

The release of Microsoft's Access database at a $99 price point has redefined pricing for database products and could stretch Borland's margins even thinner. Ironically, Borland has long been known as the pacesetter in inexpensive and innovative pricing.

Another competitor in the Windows database market, Software Publishing Corp. (SPC), said it will not even try to compete on that basis.

"Microsoft is trying to burn Borland's house down," said Fred Gibbons, SPC's chief executive officer. "There's a price war going on between those two gorillas, and they're going to keep swinging until one of them falls down."

Gibbons' own product, Superbase 2.0, is not aimed at that end of the market, he said. As a result, SPC is able to compete in areas that Microsoft does not address, he said.

Borland, meanwhile, following a tough year filled with missteps [CW, Dec. 14], reorganized two weeks ago and divided the company along functional vs. product areas. In the past, Borland's product units, such as languages and applications, worked somewhat autonomously on research and development, sales and marketing. Under the new structure, those areas have been consolidated.

The result, said President and Chief Executive Officer Philippe Kahn, is a company that performs the same tasks more efficiently and provides a common interface to both customers and himself. "I used to have to go and talk to four different marketing people when I wanted to implement a global marketing idea," he said. "This feels much better."

He noted that one big mistake was not implementing the structure a year ago.

The road back to profit

Though struggling in the third quarter, Borland's first half of '93 has outperformed the like period last year

Dollar figures are rounded (in millions)

	Revenue	Income	Employees
1990	$113.3	$11.80	2,200
1991	$226.8	$26.80	2,700
1992	$482.5	$(110.30)**	2,100
1993*	$242.6	$7.08	2,850

*Figures for Q1-Q2 only
**Includes write downs from Ashton-Tate acquisition

Source: Borland CW Chart: Michael Siggins

Kahn said the reorganization should also feel better for customers, who will now be able to deal with a common sales force familiar with the entire Borland product line, from Quattro Pro to interbase. "I think customers will see a better company," he said.

Kahn declined to pinpoint which areas in Borland were affected by the layoff of some 350 employees, though he noted there was considerable managerial overlap among product groups. For example, instead of having separate research and development managers for each product, Borland's vice president of R&D, Bob Warfield, will now coordinate all efforts.

> "Microsoft is trying to burn Borland's house down."
>
> *Fred Gibbons*
> *CEO*
> *Software Publishing*

Rebound possible

Analysts seemed hopeful that the changes at Borland will indeed be enough to turn the company around. Andrew Topper, president of Foresite Systems, compared the company to other firms, such as KnowledgeWare, Inc., that stepped back, restructured and came out competitive. "I would expect that to happen with Borland," he said.

Such a resurgence will not come without a price, however. Wall Street is expecting an operating loss from Borland this quarter. What remains to be seen is how big the loss will be. Revenue is expected to be in the $110 million to $120 million range. The hit to that revenue as a result of the layoffs and other costs could result in a write-off as high as $35 million. Neither Wall Street nor Borland is predicting how high the company's quarterly loss will be.

Ironically, one reason for optimism is also at the root of some of Borland's recent troubles: object-oriented technology.

Kahn has admitted that rebuilding the company's products on an object-oriented base has taken about eight months longer than expected. As a result, Wall Street became impatient with slipped ship dates for vital Windows products, such as Paradox for Windows and dBase for Windows, and Borland's stock dipped to a quarter of its highest value.

However, that same object-oriented base should help Borland update products more quickly, efficiently and with fewer bugs in the future. Analysts point to Borland's speedy upgrades to ObjectVision as an example of what may be expected with other products. Kahn noted that an upgrade to Quattro Pro for Windows is due by September 1993 — roughly one year after the product debuted.

That technology base could help keep Borland afloat where other afflicted companies, such as Ashton-Tate Corp., have sunk. "Borland has historically had good technology," said Terence Quinn, senior technology analyst at Kidder, Peabody & Co. in New York. But, at this point, Borland's success, at least in the stock market, rides on one thing: getting good products out the door. Borland must "deliver on time," he said. And, he added, it must learn not to make promises it cannot keep.

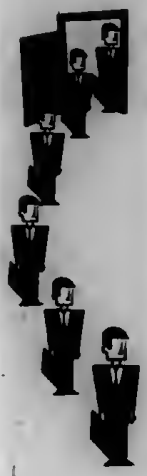
Kahn noted, however, that he will not let Wall Street or the press push him into releasing products that are not ready. "My biggest fear is to, at any point, be tempted to not stay the course," he said. "The only way to compete with Microsoft is to release the best products."

Poor precedents

While some analysts are calling for Borland to bring in outside executives to help run the company, history doesn't bode too well for such situations.

Apple Computer, Inc. lost its visionary when founder Steve Jobs was ousted from the company after he brought in John Sculley as president.

Microsoft has experienced its own problems finding — and keeping — company presidents. Jon Shirley, who joined Microsoft from Texas Instruments, Inc. in the mid 1980s, exited in 1989. His successor, Michael Hallman, who left a high-paying job as the president of Boeing Computer Services Co., departed last year after an 18-month stint.



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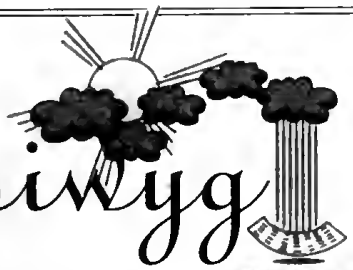

FROM OUR READER FILES

ALL WET

In 1966, we were shipping software to the Marshall Islands from New Jersey. We shipped punch cards, and they stood out on runways in California and Hawaii and got drenched. They expanded and couldn't be read. So we had to establish software curing rooms; we put the cards in air-conditioning for four days to dry them out. We could not send magnetic tapes because at the time we could not keep them aligned. Eventually, we went to satellite transmission, not because we needed the speed but because that was the only way to avoid the physical problems of wet cards or tape misalignment.

WINDOWS WEIRDNESS

By Jeff McGroary

Weird, off-the-wall, undocumented features appear in a lot of software, including Windows.

EAT Those of us who date back to the early days of Windows development — circa 1986 — remember the oddly named BurgerMaster segment that was an integral part of the Windows 1.X and 2.X memory management system. Why BurgerMaster? Well, it seems that the Windows development team wanted to recognize the Redmond, Wash., establishment that was its late-night restaurant of choice during development crunch time.

MASTER

BurgerMaster disappeared with Windows 3.X.

(Watch this space for future glimpses into the undocumented world of Windows.)

Find any interesting, undocumented features in your applications? If so, please contact Lory Dix or Jodie Naze at (800) 343-6474. If we use your ideas, we'll send you a gift.

TAKE A HINT, WINDOWS

PCMCIA stands for Personal Computer Memory Card International Association. But Andy Seybold, publisher of the "Outlook on Computing" newsletter has offered a new definition for the word: People Cannot Memorize Computer Industry Acronyms.

"In God we trust, everything else we walk through"

Slogan from the Center for Project Management in San Ramon, Calif.

The Fifth Wave

Inside Lines

Memory lapse

The word across CompuServe is that one of the more serious bugs in Microsoft's Access can occur when it is used with Stac Electronics' Stacker Version 3.0 disk compression package. Several Stacker 3.0 users have reported problems when using Access. Symptoms include "out of memory" errors and reports by Access of corrupted databases. According to both companies, the situation is under investigation, and it is unclear what is causing the problems.

PowerPrint

Apple will follow up on the outstanding success of its PowerBook portable (one-year totals of 400,000 units sold and $1 billion in revenue) with the release of a similarly sized portable printer. Sources familiar with Apple's plans said to keep your eyes out for a four-pound serial Quikdraw model sometime around midyear, with a slightly heavier color model to follow.

Hooray for user groups

A flurry of clamorous protests from Apple user groups regarding the System 7.1 upgrade kit has finally paid off. Although Apple has barred user groups from distributing System 7.1, Apple Senior Vice President Roger Heinen has sent out a letter saying members can get the System 7.1 upgrade kit for a reduced price of $27.95 by simply calling the upgrade line at (800) 769-2775 and identifying their group. The price represents a 20% discount off the kit's typical $34.95 price.

High fives

Unisys' financial recovery appears to be making steady progress. At a meeting last week with securities analysts in Boston, James A. Unruh, Unisys chairman and CEO, said the company expects to report its fifth consecutive profitable quarter for fourth-quarter 1992. In addition, Unruh said the company has exceeded its profit, cash flow and revenue goals for 1992, although he said fourth-quarter revenue will be down from last year's levels, which were abnormally high.

Rounding the Basis

First Financial Management Corp. (FFMC), which recently agreed to an out-of-court settlement with IBM regarding FFMC's Basis banking project [CW, Dec. 14,], has reportedly put its Basis Information Technologies, Inc. outsourcing unit on the block. Basis, which provides data processing and other computer services for 600 financial firms, is reportedly being considered by third-party data processing companies, including Fiserv, Inc. and M&I Data Corp., both based in Milwaukee.

Can you spell price war?

Don't look now, but with Intel planning record run rates of the I486 for 1993, and IBM, AMD, Texas Instruments and Cyrix all in or certain to enter the 486 market in 1993, Kimball Brown, an analyst at Computer Intelligence/Infocorp, muses that there could be as many as 40 million 486-class chips produced for the year. He notes that the market has never absorbed that many PCs and sees a mini price war on the chip side, which could have an impact on box tags.

Ever wish your printer could talk — just so you could cuss it out? Wait until next year when Lexmark and TI are expected to release a new breed of printers based on the Network Printing Alliance protocol. The standard provides a high-speed bidirectional link between printer and PC or host. It also allows a printer to take care of all those nasty complex tasks that have bugged users for years — such as making sure your application matches the printer's definition language and letting you know when it runs out of paper — so you don't have to trek over in person to find out why your job didn't print. One question is how fast the rest of the industry will jump on the standard. HP is holding out with its own bidirectional link, according to sources. The standard is slated for general availability at Networld on Jan. 11. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's *24-hour voice-mail tip line at (508) 820-8555.*

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